

IDAHO DEPARTMENT OF FISH AND GAME

Jerry Mallet, Acting Director

**FEDERAL AID IN FISH RESTORATION
Job Performance Report
Program F-71-R-20**



**REGIONAL FISHERIES MANAGEMENT INVESTIGATIONS
SALMON REGION (Subprojects I, II, III, IV)**

PROJECT I.

**Job a.
Job b
Job c¹
Job C²
Job d**

PROJECT II

PROJECT III

PROJECT IV

SURVEYS AND INVENTORIES

**Salmon Region Mountain Lakes Investigations
Salmon Region Lowland Lake Investigations
Salmon Region Rivers and Streams Investigations
Salmon Region Rivers and Streams Investigations
Salmon Region Salmon and Steelhead Investigations**

SALMON REGION TECHNICAL GUIDANCE

SALMON REGION HABITAT MANAGEMENT

SALMON REGION POPULATION MANAGEMENT

By

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TABLE OF CONTENTS

<u>Project I /Job a: Salmon Region Mountain Lakes Investigations</u>	<u>Page</u>
ABSTRACT	1
OBJECTIVES.....	2
METHODS	2
RESULTS & DISCUSSION.....	2

List of Tables

Table.....1.	Alpine lake survey data for Dome Lake, 1995	3
Table.....2.	Alpine lake survey data for Lower Champion Lake (#2), 1995	4
Table.....3.	Alpine lake survey data for Upper Champion Lake (#3), 1995	5
Table.....4.	Alpine lake survey data for Walker Lake, 1995	6
Table.....5.	Alpine lake survey data for Cove Lake, 1995	7
Table.....6.	Alpine lake survey data for Sapphire Lake, 1995	8
Table.....7.	Alpine lake survey data for Tincup Lake, 1995.....	9
Table.....8.	Alpine lake survey data for Island Lake, 1995	10
Table.....9.	Alpine lake survey data for Gooseneck Lake, 1995	11
Table.....10.	Alpine lake survey data for Crater Lake, 1995.....	12
Table.....11.	Alpine lake survey data for Pothole lake, 1995.....	13
Table.....12.	Alpine lake survey data for Glacier Lake, 1995	14
Table.....13.	Alpine lake survey data for Big Clear Lake, 1995.....	15

TABLE OF CONTENTS (Cont.)

Project I /Job b: Salmon Region Lowland Lake Investigations Page

ABSTRACT	16
----------------	----

Project I /Job c¹: Salmon Region River and Streams Investigations - Wild Trout Population Surveys

ABSTRACT	17
OBJECTIVES.....	18
STUDY AREA & METHODS.....	18
RESULTS & DISCUSSION.....	18

TABLES

Table 1.	Estimates of bull trout densities and capture probabilities for McConn and Indian creeks located near Shoup, Idaho sampled during July 1995. Estimates are for bull trout >7 cm total length only	20
Table 2.	Estimates of trout densities (all species) and capture probabilities for McConn and Indian creeks located near Shoup, Idaho sampled during July 1995. Estimates are for trout >7 cm total length only	20
Table 3.	Minimum, maximum, and mean total length (TL) of trout (all species) Captured in Indian and McConn creeks during July 1995.....	21
Table 4.	Estimates of trout densities (rainbow/steelhead and cutthroat trout) July 1995, for Horse Creek drainage streams.....	21

TABLE OF CONTENTS (Cont.)

APPENDIX

	<u>Page</u>
Appendix A. Length frequency distributions of salmonids observed in Indian Creek, July, 1995.	22
Appendix B. Length frequency distributions of salmonids observed in McConn Creek, July, 1995.	23
Appendix C. Length frequency distributions of salmonids observed in Horse Creek, July 1995.	24
Appendix D. Length frequency distributions of salmonids observed in Colt Creek, July, 1995.	25
Appendix E. Length frequency distributions of salmonids observed in Little Horse Creek, July 1995.....	26
Appendix F. Length frequency distributions of salmonids observed in Bronco Creek, July 1995.....	27

Project I / Job c²: Salmon Region Rivers and Stream Investigations - Idaho Supplementation Study & Parr Monitoring

ABSTRACT.....	28
INTRODUCTION	29
METHODS.....	29
RESULTS & DISCUSSION.....	30

TABLES

Table 1. Multi-Year Densities (fish/100m ²) of cutthroat trout, rainbow/steelhead, Chinook salmon, bull trout, whitefish, and brook trout in Salmon Region tributaries.....	31
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	----

TABLE OF CONTENTS (Cont.)

APPENDIX

Appendix A. List of the streams in the Salmon Region and years for which snorkeling data has been compiled for 1991 through 1995.....	32
Appendix B. Standardized snorkeling techniques to be used in Idaho Supplementation Studies	33
Appendix C. Summary of observed fish and fish densities (fish/100m ²) for eight species encountered during snorkeling and electrofishing activities conducted between 1991 and 1995 in 28 of the Salmon Region tributaries and rivers.....	34

FIGURES

Figure 1. Salmon Region streams exhibiting the highest overall densities of fish (all species), 1991-1995.....	63
Figure 2. Salmon Region streams exhibiting the highest densities of cutthroat trout (1991-1995)	64
Figure 3. Salmon Region streams exhibiting the highest densities of brook trout (1991-1995).....	65
Figure 4. Salmon Region streams exhibiting the highest densities of bull trout (1991-1995).....	66
Figure 5. Salmon Region streams exhibiting the highest densities of rainbow trout (1991-1995)	67

Project I /Job d: Salmon Region Salmon and Steelhead Investigations

ABSTRACT	68
----------------	----

TABLE OF CONTENTS (Cont.)

<u>Project II: Salmon Region Technical Guidance</u>	<u>Page</u>
ABSTRACT	69
OBJECTIVES.....	70
METHODS	70
RESULTS	70
RECOMMENDATIONS.....	71

Project III: Salmon Region Habitat Management

ABSTRACT	72
----------------	----

Project IV: Salmon Region Population Management

ABSTRACT	73
OBJECTIVES.....	74
METHODS	74
RESULTS	74

TABLES

Table 1.	Sawtooth National Recreation Area mountain lake fry plants, 1995.....	75
Table 2.	Challis National Forest mountain lake fry stocking, 1995	77

1995 ANNUAL PERFORMANCE REPORT

State Of: Idaho Program: Fisheries Management F-71-R-20
Project I: Surveys and Inventories Subproject I-H: Salmon Region
Job: a Title: Mountain Lakes Investigations
Contract Period: July 1, 1995 to June 30, 1996

ABSTRACT

Thirteen mountain lakes were surveyed in the Salmon Region during July and August 1995. Surveys conducted included six in the Bighorn Crags, five in the White Clouds and two in the Sawtooth National Recreation Area. Each lake was surveyed for use, accessibility, fishery status, fish population, and post stocking strategies.

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OBJECTIVES

1. To evaluate the Salmon Region mountain lake fish stocking program.
2. To collect data on species composition, access, trail conditions, angler/camper use, and spawning habitat for selected Salmon Region mountain lakes.
3. To collect baseline fisheries data in mountain lakes with stunted brook trout *Salvelinus fontinalis* populations so that future management actions, such as predator introductions, can be evaluated.

METHODS

Idaho Department of Fish and Game personnel utilized gill nets and/or hook-and-line sampling gear to sample fish communities in 13 mountain lakes. Sinking monofilament gill nets, 45.7m x 1.8m with mesh ranging from 1.9cm to 6.35cm, were set overnight at each lake. In each lake, nets were set perpendicular to shore with the small mesh near shore. A small one-man raft was used to set each net.

RESULTS & DISCUSSION

Department personnel set gill nets in two Salmon Region mountain lakes, Dome and Upper Champion lakes. Dome Lake, located in the Frank Church River of No Return Wilderness area (FCRNR) contains a stunted population of brook trout. This is thought to be the only population of brook trout in the FCRNR lakes and potential eradication/reduction alternatives are being considered. One 12-hour overnight gill net set in Dome Lake during June 1995 resulted in 44 brook trout 175-200 mm total length. Angling resulted in a catch rate of 16 fish/hr of similar length.

Upper Champion Lake located at the head of Champion Creek in the Sawtooth National Recreation Area (SNRA) contains a small population of rainbow trout *Oncorhynchus Mykiss* and an abundance of brook trout. Gill net efforts in 1992 produced 4.8 fish/hr, 82% of which were brook trout with a mean total length of 257 mm. During July 1993, 108 bull trout *Salvelinus confluentus* (mean length 287 mm) were stocked in Upper Champion Lake in an effort to increase the mean length of brook trout by decreasing numbers through predation. Department personnel set gill nets in upper Champion Lake during August 1995 and found very few fish. Twenty-five hours of gill net effort resulted in eight brook trout captured (0.32 fish/hr.). Winter kill during 1994-95 appears to have temporarily reduced the overabundant brook trout population in upper Champion Lake. No bull trout were sampled.

Results of each lake sampled are documented in tables 1-13.

Table 1. Alpine lake survey data for Dome Lake, 1995.

LAKE LOCATION

Lake name: Dome Survey date: 6-24-95
 IDFG catalog no.: 07-1180 Primary drainage: Salmon
 Secondary drainage: Lake Creek County: Lemhi
 USFS ranger district: Cobalt Wilderness area: FERN
 Section: 18 Township: 22N Range: 24W Elevation (ft): 7900

USE

No. Campsites: 1 No. Firepits: 1 Litter: 1 ✓ m h
 Trail around lake: complete partial trampled yes ✓ no
 Access: good trail (mi) 6 poor trail (mi) cross country (mi) 1
 Trailhead location: Garden Creek Trailhead

FISHERY AND FISH POPULATIONS

Creel Survey

No fishermen: 2 Hours fished: .5 No. Fish caught: 16
 Fish/hour: 16 Fish abundance: 1 m h ✓

Length Frequency

Total Length (mm)									
Species	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	> 400
Brook				10	6				
TOTAL				10	6				

Stocking History

Year	Species	Number of fish	Comments
1949	Brook	1040	3 in. - Mackay Hatchery

COMMENTS:

One 12-hour overnight gill net set caught 44 brook trout 175-200 mm TL.. Two inlet streams provide suitable spawning areas, no above ground outlet.

Table 2. Alpine lake survey data for Lower Champion Lake (#2), 1995.

LAKE LOCATION

Lake name: Lower Champion (#2) Survey date: 8/4-5/95
 IDFG catalog no.: 07-1730 Primary drainage: Salmon
 Secondary drainage: Champion Creek County: Custer
 USFS ranger district: SNRA Wilderness area: _____
 Section: 22 Township: 8N Range: 15E Elevation (ft): 9500

USE

No. Campsites: 3 No. Firepits: 5 Litter: 1 ☒ m _____ h _____
 Trail around lake: complete ☒ partial _____ trampled: yes ☒ no _____
 Access: good trail (mi) 3.1 poor trail (mi) _____ cross country (mi) _____
 Trailhead location: Pole Creek Summit USFS Road #197

FISHERY AND FISH POPULATIONS

Creel Survey

No fishermen: 2 Hours fished: 2.5 No. Fish caught: 3
 Fish/hour: .6 Fish abundance: 1 _____ m ☒ h _____

Length Frequency

Total Length (mm)									
Species	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	> 400
Brook						1	2		
TOTAL						1	2		

Stocking History

Year	Species	Number of fish	Comments
1956	Rainbow	700	25-50 mm - Hayspur
1954	Rainbow	2,400	Fry - Hayspur
1949	Rainbow	5,000	Fry - Hayspur
1946	Cutthroat	10,000	Fry - Hayspur

COMMENTS:

According to a local outfitter with a camp on the lake, Lower Champion experienced some winter kill during 94/95. Lake appears to get heavy use judging by trail condition, litter, camp sites, and number of people observed. Lake appears to have fair number of 10-14 in. Brook trout and high number of shiners. Very limited spawning habitat available in small inlet and outlet.

Table 3. Alpine lake survey data for Upper Champion Lake (#3), 1995.

LAKE LOCATION

Lake name: Upper Champion (#3) Survey date: 8/4-5/95
 IDFG catalog no.: 07-1731 Primary drainage: Salmon
 Secondary drainage: Champion Creek County: Custer
 USFS ranger district: SNRA Wilderness area: _____
 Section: 22\27 Township: 8N Range: 15E Elevation (ft): 9500

USE

No. Campsites: 5 No. Firepits: 6 Litter: 1 _____ m ☒ _____ h _____
 Trail around lake: complete ☒ partial _____ trampled ☒ yes _____ no _____
 Access: good trail (mi) 1.75 poor trail (mi) 2 cross country (mi) _____
 Trailhead location: Pole Creek Summit USFS Road #197

FISHERY AND FISH POPULATIONS

Creel Survey

No. Fishermen: 2 Hours fished: 1.5 No. Fish caught: 0
 Fish/hour: 0 Fish abundance: 1 ☒ _____ m _____ h _____

Length Frequency

Species	Total Length (mm)								
	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	> 400
Brook			1	2	3	1	1		
TOTAL			1	2	3	1	1		

Stocking History

Year	Species	Number of fish	Comments
1993	Bull Trout	108	287 mm ave. - Cabinet Gorge
1987	Cutthroat	500	Fry - Mackay

COMMENTS:

Fish collected in 25 hours of gillnet effort. Lake experienced winter kill during winter 1994/1995. Bull trout with mean length 287 mm were stocked in 1993. Bull trout and majority of stunted brook trout appear to be no longer present. Spawning substrate available in inlet and outlet stream.

Table 4. Alpine lake survey data for Walker Lake, 1995.

LAKE LOCATION

Lake name: Walker Survey date: 8-9-95
 IDFG catalog no.: 07-1355 Primary drainage: EFSR
 Secondary drainage: Big Boulder Creek County: Custer
 USFS ranger district: SNRA Wilderness area: _____
 Section: 17 Township: 9N Range: 16E Elevation (ft): 9239

USE

No. Campsites: 4 No. Firepits: 4 Litter: 1 √ m _____ h _____
 Trail around lake: complete _____ partial √ trampled: yes √ no _____
 Access: good trail (mi) 7 poor trail (mi) _____ cross country (mi) _____
 Trailhead location: Big Boulder Trailhead

FISHERY AND FISH POPULATIONS

Creel Survey

No fishermen: 2 Hours fished: 2 No. Fish caught: 65
 Fish/hour: 16.3 Fish abundance: 1 _____ m _____ h √

Length Frequency

Species	Total Length (mm)								
	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	> 400
Rbt			20	45					
C ₂				1					
TOTAL			20	46					

Stocking History

Year	Species	Number of fish	Comments
No stocking history			

COMMENTS:

No stocking history. Many fish observed cruising and surfacing. Lake appears to get heavy use. Lake has abundant inlet, outlet, and shoal spawning areas. The fish in Walker Lake appear to be stunted, a result of over-population. A valuable fishery in that anyone can catch trout 6-8 inches.

Table 5. Alpine lake survey data for Cove Lake, 1995.

LAKE LOCATION

Lake name: Cove Survey date: 8-10-95
 IDFG catalog no.: 07-1364 Primary drainage: EFSR
 Secondary drainage: Big Boulder Creek County: Custer
 USFS ranger district: SNRA Wilderness area: _____
 Section: 20 Township: 9N Range: 16E Elevation (ft): 9842

USE

No. Campsites: 0 No. Firepits: 2 Litter: 1 ☒ m ☐ h
 Trail around lake: complete _____ partial ☒ trampled: yes ☒ no _____
 Access: good trail (mi) 7 poor trail (mi) 1 cross country (mi) _____
 Trailhead location: Big Boulder Trailhead

FISHERY AND FISH POPULATIONS

Creel Survey

No fishermen: 3 Hours fished: 1.2 No. Fish caught: 3
 Fish/hour: .86 Fish abundance: 1 ☒ m ☐ h

Length Frequency

Total Length (mm)									
Species	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	> 400
Rbt.							1		
Rbt/C ₂									1
C ₂					1				
TOTAL					1		1		1

Stocking History

Year	Species	Number of fish	Comments
1993	Cutthroat	750	SNFH
1984	Cutthroat	1600	Mackay
1977	Cutthroat	2016	Mackay
	Cutthroat	2112	Mackay

COMMENTS:

Main food item in fish sampled were amphipods, several large fish observed in inlet (12-22 in.). Fish density appears low but with great growth potential.

Table 6. Alpine lake survey data for Sapphire Lake, 1995.

LAKE LOCATION

Lake name: Sapphire Survey date: 8-10-95
 IDFG catalog no.: 07-1367 Primary drainage: EFSR
 Secondary drainage: Big Boulder Creek County: Custer
 USFS ranger district: SNRA Wilderness area: _____
 Section: 18 Township: 9N Range: 16E Elevation (ft): 9888

USE

No. Campsites: 0 No. Firepits: 2 Litter: 1 ☒ m _____ h _____
 Trail around lake: complete _____ partial _____ trampled _____ yes _____ no ☒
 Access: good trail (mi) 7 poor trail (mi) 1.5 cross country (mi) _____
 Trailhead location: Big Boulder Trailhead

FISHERY AND FISH POPULATIONS

Creel Survey

No fishermen: 3 Hours fished: 1.8 No. Fish caught: 7
 Fish/hour: 1.3 Fish abundance: 1 _____ m ☒ h _____

Length Frequency

Total Length (mm)									
Species	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	> 400
C ₂					7				
TOTAL					7				

Stocking History

Year	Species	Number of fish	Comments
1993	Cutthroat	750	SNFH
1987	Cutthroat	1500	Mackay
1984	Cutthroat	1600	Mackay
1977	Cutthroat	2304	Mackay

COMMENTS:

Fish caught were very robust. Lake should be gill netted to obtain good sample of population.

Table 7. Alpine lake survey data for Tincup Lake, 1995.

LAKE LOCATION

Lake name: Tincup Survey date: 8-10-95
 IDFG catalog no.: 07-1349 Primary drainage: EFSR
 Secondary drainage: Big Boulder Creek County: Custer
 USFS ranger district: SNRA Wilderness area:
 Section: 8 Township: 9N Range: 16E Elevation (ft): 10,000

USE

No. Campsites: _____ No. Firepits: 0 Litter: 1 √ m _____ h _____
 Trail around lake: complete _____ partial _____ trampled: yes √ no _____
 Access: good trail (mi) 5 poor trail (mi) 3 cross country (mi) _____
 Trailhead location: Bighorn Boulder Trailhead

FISHERY AND FISH POPULATIONS

Creel Survey

No. Fishermen: _____ Hours fished: _____ No. Fish caught: _____
 Fish/hour: _____ Fish abundance: 1 _____ m _____ h _____

Length Frequency

Total Length (mm)									
Species	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	> 400
TOTAL									

Stocking History

Year	Species	Number of fish	Comments
1993	Grayling	1000	Mackay
1990	Grayling	500	Mackay
1987	Grayling	1000	Mackay
1984	Cutthroat	1600	Mackay

COMMENTS:

No suitable spawning areas available. Four anglers interviewed said they caught "dollies" before,. 6"-12" C₂ cutthroat observed.

Table 8. Alpine lake survey data for Island Lake, 1995.

LAKE LOCATION

Lake name: Island Survey date: 8-10-95
 IDFG catalog no.: 07-1371 Primary drainage: EFSR
 Secondary drainage: Big Boulder Creek County: Custer
 USFS ranger district: SNRA Wilderness area: _____
 Section: 20 Township: 9N Range: 16E Elevation (ft): 9300

USE

No. Campsites: _____ No. Firepits: _____ Litter: 1 √ m _____ h _____
 Trail around lake: complete _____ partial _____ trampled yes √ no
 Access: good trail (mi) 8 poor trail (mi) 1 cross country (mi) _____
 Trailhead location: Big Boulder Trailhead

FISHERY AND FISH POPULATIONS

Creel Survey

No fishermen: 1 Hours fished: _____ No. Fish caught: 2
 Fish/hour: _____ Fish abundance: 1 _____ m √ h _____

Length Frequency

Total Length (mm)									
Species	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	> 400
Rbt				1	1				
TOTAL				1	1				

Stocking History

Year	Species	Number of fish	Comments
1993	Cutthroat	500	SNFH
1990	Cutthroat	250	Mackay
1987	Cutthroat	750	Mackay
1973	Cutthroat	528	Mackay

COMMENTS:

Fish slender; outlet 100 yds. long with poor spawning habitat (larger rock). Lake appears to get moderate use - trail adequate for horses.

Table 9. Alpine lake survey data for Gooseneck Lake, 1995.

LAKE LOCATION

Lake name: Gooseneck Survey date: 8-18-95
 IDFG catalog no.: 07-0769 Primary drainage: Salmon
 Secondary drainage: Clear Creek County: Lemhi
 USFS ranger district: Cobalt Wilderness area: FERN
 Section: 15 Township: 21N Range: 15E Elevation (ft): 9100

USE

No. Campsites: 0 No. Firepits: 1 Litter: 1 m h
 Trail around lake: complete partial trampled: yes ✓ no
 Access: good trail (mi) 10 poor trail (mi) 1.5 cross country (mi) 1
 Trailhead location: Bighorn Crags Campground

FISHERY AND FISH POPULATIONS

Creel Survey

No fishermen: 2 Hours fished: 1.5 No. Fish caught: 3
 Fish/hour: 1 Fish abundance: 1 ✓ m h

Length Frequency

Species	Total Length (mm)								
	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	> 400
GN				2			1		
TOTAL				2			1		

Stocking History

Year	Species	Number of fish	Comments
1989	Golden	500	Mackay
1986	Golden	500	Mackay
1977	Golden	500	Mackay
1970	Golden	1000	Mackay

COMMENTS:

Few fish observed, no natural reproduction apparent.

Table 10. Alpine lake survey data for Crater Lake, 1995.

LAKE LOCATION

Lake name: Crater Survey date: 8-17-95
 IDFG catalog no.: 07-0768 Primary drainage: Salmon
 Secondary drainage: Clear Creek County: Lemhi
 USFS ranger district: Cobalt Wilderness area: FCRNR
 Section: 15 Township: 21N Range: 15E Elevation (ft): 8800

USE

No. Campsites: 2 No. Firepits: 2 Litter: 1 √ m h
 Trail around lake: complete partial trampled yes √ no
 Access: good trail (mi) 11 poor trail (mi) cross country (mi)
 Trailhead location: Bighorn Crag Campground

FISHERY AND FISH POPULATIONS

Creel Survey

No. Fishermen: 2 Hours fished: 1.25 No. Fish caught: 1
 Fish/hour: .4 Fish abundance: 1 √ m h

Length Frequency

Species	Total Length (mm)								
	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	> 400
GN							1		
TOTAL							1		

Stocking History

Year	Species	Number of fish	Comments
1989	Golden	500	Mackay
1986	Golden	1000	Mackay
1977	Golden	1060	Mackay
1970	Golden	1000	Mackay

COMMENTS:

Very few fish seen cruising.

Table 11. Alpine lake survey data for Pothole Lake, 1995.

LAKE LOCATION

Lake name: Pothole Survey date: 8-17-95
 IDFG catalog no.: 07-0767 Primary drainage: Salmon
 Secondary drainage: Clear Creek County: Lemhi
 USFS ranger district: Cobalt Wilderness area: FCRNR
 Section: 15 Township: 21N Range: 15E Elevation (ft): 8620

USE

No. Campsites: 0 No. Firepits: 0 Litter: 1 √ m h
 Trail around lake: complete partial trampled yes √ no
 Access: good trail (mi) 10 poor trail (mi) 1 cross country (mi)
 Trailhead location: Bighorn Crags Campground

FISHERY AND FISH POPULATIONS

Creel Survey

No fishermen: 2 Hours fished: 1 No. Fish caught: 5
 Fish/hour: 2.5 Fish abundance: 1 m √ h

Length Frequency

Species	Total Length (mm)								
	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	> 400
C ₂				2		1			
C ₂ /Rbt				2					
TOTAL				4		1			

Stocking History

Year	Species	Number of fish	Comments
1992	Cutthroat	250	Mackay
1989	Cutthroat	500	
1986	Cutthroat	250	
1970	Cutthroat	500	

COMMENTS:

Very small lake, off the beaten trail, receives very little pressure, no campsites or fire rings around lake.

Table 12. Alpine lake survey data for Glacier Lake, 1995.

LAKE LOCATION

Lake name: Glacier Survey date: 8-18-95
 IDFG catalog no.: 07-0770 Primary drainage: Salmon
 Secondary drainage: Clear Creek County: Lemhi
 USFS ranger district: Cobalt Wilderness area: FCRNR
 Section: 9 Township: 21N Range: 15E Elevation (ft): 8800

USE

No. Campsites: 0 No. Firepits: 0 Litter: 1 √ m h
 Trail around lake: complete partial trampled yes √ no
 Access: good trail (mi) 10 poor trail (mi) 2 cross country (mi) 1.5
 Trailhead location: Bighorn Crags Campground

FISHERY AND FISH POPULATIONS

Creel Survey

No. Fishermen: 2 Hours fished: 1.25 No. Fish caught: 1
 Fish/hour: .4 Fish abundance: 1 √ m h

Length Frequency

Species	Total Length (mm)								
	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	> 400
GN							1		
TOTAL							1		

Stocking History

Year	Species	Number of fish	Comments
1989	Golden	500	Mackay
1986	Golden	1000	Mackay
1977	Golden	1060	Mackay
1970	Golden	1000	Mackay

COMMENTS:

No fish seen rising, few fish observed cruising, no natural reproduction potential. Very scenic, secluded area.

Table 13. Alpine lake survey data for Big Clear Lake, 1995.

LAKE LOCATION

Lake name: Big Clear Survey date: 8-17-95
 IDFG catalog no.: 07-1183 Primary drainage: Salmon
 Secondary drainage: Clear Creek County: Lemhi
 USFS ranger district: Cobalt Wilderness area: FCRNR
 Section: 15 Township: 21N Range: 15E Elevation (ft): 8562

USE

No. Campsites: 3 No. Firepits: 7 Litter: 1 √ m h
 Trail around lake: complete √ partial trampled yes √ no
 Access: good trail (mi) 9.3 poor trail (mi) cross country (mi)
 Trailhead location: Crags Campground

FISHERY AND FISH POPULATIONS

Creel Survey

No fishermen: 2 Hours fished: 1.75 No. Fish caught: 2
 Fish/hour: .57 Fish abundance: 1 √ m h

Length Frequency

Total Length (mm)									
Species	0-49	50-99	100-149	150-199	200-249	250-299	300-349	350-399	> 400
Rbt				2					
TOTAL				2					

Stocking History

Year	Species	Number of fish	Comments
1989	Golden	500	Mackay

COMMENTS:

Spawning habitat available in outlet stream; 2-10 inch fish seen in outlet.

1995 ANNUAL PERFORMANCE REPORT

State of: Idaho Program: Fishery Management F-71-R-20
Project I: Surveys and Inventories Subproject I-H: Salmon Region
Job: b Title: Lowland Lake Investigations
Contract Period: July 1, 1995 to June 30, 1996

ABSTRACT

No specific lowland lake studies were conducted in the Salmon Region during 1995.

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1995 ANNUAL PERFORMANCE REPORT

State of: Idaho

Program: Fishery Management F-71-R-20

Project I: Surveys and Inventories

Subproject I-H: Salmon Region

Job: c¹ - Wild Trout Population Surveys

Title: Rivers and Streams Investigations

Contract Period: July 1, 1995 to June 30, 1996

ABSTRACT

During summer 1995 six tributaries in the Salmon River Drainage were surveyed in order to assess fish populations and size structure of salmonids. Streams surveyed included Horse and Indian creeks, two tributaries to the mainstem Salmon River near Shoup, Idaho, and four tributaries to these streams.

Two streams were sampled by electrofishing, using multiple-pass removals to derive population estimates. Age 0 fish (<70 mm) were not included in the population estimates due to their reduced capture probability. Streams were sampled at two sites each. Four streams were sampled by snorkeling. Stream transects were sampled using Idaho's standardized snorkeling techniques (Leitzinger et. al. 1993).

Bull trout *Salvelinus confluentus* and cutthroat trout *Oncorhynchus clarki lewisi* were the only salmonids sampled in Indian and McConn creeks electrofishing sites. Steelhead/rainbow trout *O. mykiss* and cutthroat trout were the most abundant fish observed in the four Horse Creek drainage streams.

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OBJECTIVES

1. Determine species composition, relative abundance, and size structure of fish populations in selected Salmon Region tributaries.

STUDY AREA AND METHODS

Fish in Indian and McConn creeks were captured by electrofishing, using a Smith-Root SR-15 backpack unit. We attempted to catch all sizes of game and non-game fish. Block nets were set at either end of the transects unless natural barriers were present (i.e., waterfall, beaver dam, or high-gradient riffle). Passes were made going upstream, with each consecutive pass being made immediately after and with equal effort to the previous pass. Two passes were generally made, with a third occasionally being needed to achieve reduction.

Captured fish were measured to total length, placed in holding pens, and monitored for recovery until all passes were completed. Once electrofishing was completed, each fish was returned to the habitat from which it was captured. We estimated relative abundance from all fish captured, and assumed that capture probabilities did not vary with species. No attempt was made to differentiate between rainbow and steelhead trout. We used the maximum likelihood estimator to estimate fish abundance and probability of capture.

Density estimates were reported as fish sampled per 100 m² of transect surface area. Because smaller fish were not efficiently sampled, only fish 70 mm and larger were used in the population estimates. All trout species were combined to derive each density estimate.

Two sites were chosen in the upper reaches of Indian Creek, approximately 12 kilometers upstream of its confluence with the Salmon River. McConn Creek, an Indian Creek tributary, was sampled approximately 1.6 and 3.2 kilometers above its confluence with Indian Creek.

Snorkeling was conducted in Horse Creek drainage. One snorkeler was used in each stream due to high visibility and narrow stream widths. Snorkeling was done in daylight hours. Refer to ISS standardized snorkeling techniques for detailed snorkeling technique used (Leitzinger et. al. 1993). One or two transects per stream were snorkeled depending on accessibility and expected variance. Length and width measurements were recorded for each transect to determine fish densities (number/100 m²).

RESULTS AND DISCUSSION

Bull trout *Salvelinus confluentus* were the predominant salmonid collected in the Indian Creek drainage (Table 1, Appendices A & B). Cutthroat trout *Oncorhynchus clarki lewisi* were the only other salmonid collected. Thirty-three juvenile bull trout were collected in two Indian Creek and two McConn Creek sites. Cutthroat were collected in three streams.

Densities of age one and older (>70 mm) bull trout ranged from 2.1 fish/100 m² in upper McConn Creek site to 17.9 fish/100 m² in lower McConn Creek site (Table 1).

Densities of both species combined ranged from 2.13 fish/100 m² in upper McConn Creek site to 22.4 fish/100 m² in lower McConn Creek (Table 2).

Mean total length of all trout species captured (N=42) in Indian and McConn creek electrofishing sites ranged from 76-105 mm (Table 3).

The dense forest canopy, stream shading from undercut banks, complex woody debris and abundant cobble/boulder substrate, provide suitable rearing habitat for bull trout in the roadless upper reaches of Indian and McConn creeks.

Steelhead/rainbow *O. mykiss* and cutthroat trout were the only salmonid species collected in the Horse Creek drainage (Appendices C-F). Steelhead/rainbow and cutthroat trout abundance was estimated in four Horse Creek drainage streams (Table 4). Steelhead/rainbow trout densities ranged from .05 fish/100 m² in Bronco Creek to .65 fish/100 m² in Colt Creek. Cutthroat trout densities ranged from 0-.12 fish/100 m².

Table 1. Estimates of bull trout densities and capture probabilities for McConn and Indian Creeks located near Shoup, Idaho sampled during July 1995. Estimates are for bull trout >7 cm total length only.

Site	Date Surveyed	Density (fish/100m ²)	Lower 95% CI	Upper 95% CI	Capture Prob (P)	Total Captured
McConn (Lower)	7-16-95	17.9	12.9	23	.55	16
McConn (Upper)	7-16-95	2.1	2	7.3	.66	2
Indian (Lower)	7-19-95	12.7	7.4	18	.58	7
Indian (Upper)	7-19-95	8	9.5	15.1	.67	8

Table 2. Estimates of trout densities (all species) and capture probabilities for McConn and Indian creeks located near Shoup, Idaho sampled during July 1995. Estimates are for trout >7cm total length only.

Site	Date Surveyed	Density (fish/100m ²)	Lower 95% CI	Upper 95% CI	Capture Prob (P)	Total Captured
McConn (Lower)	7-16-95	22.4	7.3	26.8	.59	20
McConn (Upper)	7-16-95	2.13	2	7.3	.67	2
Indian (Lower)	7-19-95	16.3	12.3	20.3	.64	9
Indian (Upper)	7-19-95	16.9	8.6	25.2	.50	10

Table 3. Minimum, maximum, and mean total length (TL) of trout (all species) captured in Indian and McConn Creeks during July 1995.

Stream	Date Surveyed	Min TL (mm)	Max TL (mm)	Mean TL (mm)	Sample Size
<u>Bull trout</u>					
Indian Cr	7-19-95	25	144	80	15
McConn Cr	7-16-95	62	169	93	19
<u>Cutthroat</u>					
Indian Cr	7-19-95	69	125	105	4
McConn Cr	7-16-95	56	88	76	4

Table 4 Estimates of trout densities (rainbow/steelhead and cutthroat trout) July 1995, for Horse Creek drainage streams.

Site	Date Surveyed	Steelhead/Rainbow Density Fish/100 m ²	Total Steelhead/Rainbow Observed	Cutthroat Density Fish/100 m ²	Total Cutthroat Observed
Horse Creek (Lower)	7-28-95	.22	17	.08	6
Horse Creek (Upper)	7-31-95	.35	9	.12	3
Colt Creek	7-28-95	.65	15	--	0
Little Horse Cr	7-30-95	.22	5	.09	2
Bronco Creek	7-29-95	.05	1	.05	1

Appendix A. Length frequency distributions of salmonids observed in Indian Creek, July 1995. Total number of each species captured in parentheses.

TL range (mm)	Cutthroat (6)	Bull trout (13)
<50		5
50-59		
60-69	1	
70-79		3
80-89		
90-99		
100-109		1
110-119	2	4
120-129	1	
130-139		
140-149	2	
150-159		
160-169		
170-179		
180-189		
190-199		
200-209		
210-219		
220-229		
230-239		
240-249		
250-259		
260-269		
270-279		
280-289		
290-299		
300-309		
310-319		
320-329		
330-339		
340-349		
350-359		
360-369		
370-379		
380-389		
390-399		
400-409		
410-419		
420-429		
430-439		
440-449		
450-459		
460-469		
470-479		
480-489		
490-499		
>500		

Appendix B. Length frequency distributions of salmonids observed in McConn Creek, July 1995. Total number of each species captured in parentheses.

TL range (mm)	Cutthroat (4)	Bull trout (19)
<50		
50-59	1	
60-69		9
70-79	1	3
80-89	2	
90-99		
100-109		1
110-119		2
120-129		
130-139		2
140-149		
150-159		1
160-169		1
170-179		
180-189		
190-199		
200-209		
210-219		
220-229		
230-239		
240-249		
250-259		
260-269		
270-279		
280-289		
290-299		
300-309		
310-319		
320-329		
330-339		
340-349		
350-359		
360-369		
370-379		
380-389		
390-399		
400-409		
410-419		
420-429		
430-439		
440-449		
450-459		
460-469		
470-479		
480-489		
490-499		
>500		

Appendix C. Length frequency distributions of salmonids observed in Horse Creek, July 1995.
Total number of each species captured in parentheses.

TL range (mm)	Steelhead/Rbt (26)	Cutthroat (9)
<50	1	
50-59	1	
60-69		
70-79	7	1
80-89		
90-99		
100-109	4	2
110-119	2	
120-129	3	4
130-139		
140-149		
150-159	4	1
160-169		
170-179	1	
180-189		
190-199		
200-209	2	1
210-219		
220-229		
230-239		
240-249		
250-259		
260-269		
270-279	1	
280-289		
290-299		
300-309		
310-319		
320-329		
330-339		
340-349		
350-359		
360-369		
370-379		
380-389		
390-399		
400-409		
410-419		
420-429		
430-439		
440-449		
450-459		
460-469		
470-479		
480-489		
490-499		
>500		

Appendix D. Length frequency distribution of salmonids observed in Colt Creek, July 1995. Total number of each species captured in parentheses.

TL range (mm)	Steelhead/Rbt (15)	Cutthroat (0)	Unidentified (9)
<50			8
50-59			
60-69			
70-79	4		
80-89			
90-99			
100-109			
110-119			
120-129	10		
130-139			
140-149			
150-159	1		
160-169			
170-179			
180-189			
190-199			
200-209			
210-219			
220-229			
230-239			
240-249			
250-259			1
260-269			
270-279			
280-289			
290-299			
300-309			
310-319			
320-329			
330-339			
340-349			
350-359			
360-369			
370-379			
380-389			
390-399			
400-409			
410-419			
420-429			
430-439			
440-449			
450-459			
460-469			
470-479			
480-489			
490-499			
>500			

Appendix E. Length frequency distributions of salmonids observed in Little Horse Creek, July 1995. Total number of each species captured in parentheses.

TL range (mm)	Steelhead/Rbt (5)	Cutthroat (2)
<50		
50-59		
60-69		
70-79	1	
80-89		
90-99		
100-109		
110-119		
120-129	2	1
130-139		
140-149		
150-159	1	1
160-169		
170-179		
180-189		
190-199		
200-209	1	
210-219		
220-229		
230-239		
240-249		
250-259		
260-269		
270-279		
280-289		
290-299		
300-309		
310-319		
320-329		
330-339		
340-349		
350-359		
360-369		
370-379		
380-389		
390-399		
400-409		
410-419		
420-429		
430-439		
440-449		
450-459		
460-469		
470-479		
480-489		
490-499		
>500		

Appendix F. Length frequency distribution of salmonids observed in Bronco Creek, July 1995.
Total number of each species captured in parentheses.

TL range (mm)	Steelhead/Rbt (1)	Cutthroat (1)	Unidentified (1)
<50			1
50-59			
60-69			
70-79		1	
80-89			
90-99			
100-109			
110-119			
120-129			
130-139			
140-149			
150-159	1		
160-169			
170-179			
180-189			
190-199			
200-209			
210-219			
220-229			
230-239			
240-249			
250-259			
260-269			
270-279			
280-289			
290-299			
300-309			
310-319			
320-329			
330-339			
340-349			
350-359			
360-369			
370-379			
380-389			
390-399			
400-409			
410-419			
420-429			
430-439			
440-449			
450-459			
460-469			
470-479			
480-489			
490-499			
>500			

1995 ANNUAL PERFORMANCE REPORT

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Program: Fishery Management F-71-R-20

Project I: Surveys and Inventories

Subproject I-H: Salmon Region

Job: c² - Idaho Supplementation
Study & Parr Monitoring

Title: Rivers and Stream Investigations

Contract Period: July 1, 1995 to June 30, 1996

ABSTRACT

Five years of Idaho Supplementation Study and Parr Monitoring activities in the Salmon Region have been consolidated. Twenty eight tributaries sampled at varying frequencies, primarily to monitor annual juvenile anadromous fish densities, are summarized. All data compiled is from snorkeling surveys with the exception of 1991-1993 Lemhi River data, which was surveyed via electro-fishing. Densities of fish/100 m² are reported for anadromous and resident fish species.

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INTRODUCTION

In 1993 the majority of the Parr Monitoring and Idaho Supplementation Study activities were transferred to the Salmon Region anadromous personnel. This report is a compilation of most snorkeling data available in the Salmon Region from 1991 to 1995, and incorporates both anadromous and resident fish species. The object of this report is to provide a source of compiled fisheries information that will be useful to succeeding managers and biologists.

METHODS

For the years 1991-1995, data for 28 streams in the Salmon Region (Appendix A) have been compiled for this report. Some of the streams were snorkeled for five consecutive years and others for only four, three, two or one year, depending upon priority and available funding for each given year. All data compiled is from snorkeling surveys with the exception of the 1991, 1992 and 1993 Lemhi River data, which was surveyed via electro-fishing techniques. All transects snorkeled were sampled in accordance with Idaho's standardized snorkeling techniques (Appendix B).

In an effort to compile a great deal of information into a useful compact document, all the available data has been compiled by individual stream, and includes both anadromous and resident fish species, for the available years of data (Appendix C). In addition, overall density estimates (fish/100m²) are provided using the formula:

$$\left(\frac{\text{Sum of all fish, of a given species, (all years)}}{\text{Sum of all area sampled in a given stream, (all years)}} \right) \times 100$$

The resulting density is analogous to a multi-year average, which can be used to identify individual species trends between the 28 streams surveyed, regardless of the number of years of data available for each stream. A summary of the overall density estimates for all streams surveyed is depicted in Table 1. Similarly, an all species density estimate is provided using the following rational:

All species density estimates:

$$\left(\frac{\text{Sum of all fish, of a given stream surveyed, (all years)}}{\text{Sum of all area surveyed in that stream, (all years)}} \right) \times 100$$

The resulting density estimate can be used to identify trends between streams, based on all species present in a given stream.

For the purpose of this report:

1. Big springs creek has been included in all Lemhi river data due to it's heavy influence as an upper tributary to the Lemhi River.
2. All rainbow/steelhead *Oncorhynchus Mykiss* counted in both electrofishing and snorkeling surveys, over the length of 10 inches were assumed to be rainbow trout. All rainbow/steelhead under the length of 10 inches were assumed to be steelhead.
3. All adipose or ventrally fin clipped rainbow trout counted were defined as hatchery rainbows.

RESULTS

Overall densities of fish (#/100m²) counted in Capehorn Creek, Horse Creek, Salmon River, Pahsimeroi River, and Pine Creek were 35.2, 34.5, 28.1, 18.8 and 18.6 fish/100m² respectfully and were the 5 streams exhibiting the highest density of fish (all species) in the 28 streams surveyed (Figure 1).

The range and overall densities of cutthroat trout *O. clarki lewisi* from Salmon Region streams exhibiting the highest densities of cutthroat trout indicate that Alpine Creek contains the highest density of cutthroat at 1.8 fish/100m², followed by Yellowbelly Lake Creek at 1.02 fish/100m², Loon creek at 0.48 fish/100m², and the North Fork Salmon River at 0.39 fish/100m² (Figure 2).

Observed densities for other species of interest were highest for brook trout *Salvelinus fontinalis* in Yellowbelly Creek (Figure 3), bull trout *S. confluentus* in Bear Valley Creek (Figure 4), and steelhead in Horse Creek (Figure 5).

DISCUSSION

This information will be updated approximately every three years. It will be an invaluable source to future fisheries managers and/or biologists regarding population trends and will provide a condense summary of activities previously conducted within the region.

Table1. Multi-Year Densities (fish/100m2) of cutthroat trout, rainbow/steelhead, chinook salmon, bull trout, whitefish, and brook trout in Salmon Region tributaries.

Stream	Chinook YOY	Chinook YRL	Chinook Adults	Rbt<10" SH	Rbt>10" Rbt	H. Rbt	BK	WF	BU	C2	All Species
Alpine Creek	0	0	0	0	0	0	2.79	0.26	0.37	1.84	5.27
Alturas Lake Creek	1.58	0.01	0	0.19	0.01	0	1.27	0.7	0.22	0.14	4.12
Bear Valley Creek	0	0	0	0.39	0	0	0.02	0	0.71	0	1.13
Beaver Creek	4.12	0.22	0.03	1.3	0	0	0.15	0.08	0.14	0.2	6.25
Camas Creek	5.53	0.01	0.06	6.46	0.03	0	0	1.14	0.05	0.09	13.37
Capehorn Creek	33.48	0.52	0.09	0.2	0	0	0.53	0.28	0.11	0.02	35.24
East Fork Salmon R.	0.38	0.05	0.02	0.74	0.06	0.93	0	1.52	0.01	0.01	3.73
Hayden Creek	1.35	0	0	0.96	0.04	0	0.02	0.07	0.33	0	2.78
Horse Creek	0.08	0	0	31.82	0.38	0	0	1.79	0.08	0.34	34.48
Knapp Creek	4.6	0.12	0	1.63	0.02	0	2.83	0	0.36	0.16	9.72
Lemhi River	1.47	0.05	0	7.63	0.27	0	0.7	2.91	0	0	13.03
Loon Creek	1.06	0.02	0	2.02	0	0	0.02	2.51	0	0.48	6.1
Marsh Creek	13.34	0.08	0.02	2.17	0	0	3.15	1.87	0.03	0.22	20.9
Morgan Creek	0.4	0	0	9.6	0.48	0	0.4	0.28	0	0.04	11.18
Moyer Creek	0	0	0	4.39	0.14	0.11	0	0.08	0.22	0	4.95
North Fork Salmon	3.73	0.06	0.01	5.33	0.1	0.26	0.01	2.54	0.05	0.39	12.47
Panther Creek	0.03	0	0	1.67	0.05	0.01	0.68	0.89	0.1	0.1	3.52
Pahsimeroi River	7.99	0.24	0	4.53	0.53	0.24	0.57	4.64	0.01	0.07	18.8
Pettit Lake Creek	8.77	0.05	0	1.25	0.05	0.14	2.54	0.1	0	0	12.89
Pine Creek	0.78	0	0	16.01	0.22	0.34	0	0	0.22	1.01	18.58
Redfish Lake Creek	2.46	0.02	0	1.47	0.03	0.18	0	0.65	0.03	0	4.84
Salmon River	13.31	0.62	0.02	9.94	0.02	0.12	0.01	4.01	0	0.02	28.08
Silver Creek	0	0	0	3.32	0	0	0.83	0	0	0	4.15
Thompson Creek	1.24	0.04	0	3.52	0.04	0.15	0	0.52	0.11	0	5.61
Valley Creek	3.66	0	0	0.45	0.12	0.04	0.1	0.35	0	0.04	4.76
Warm Springs Creek	0.9	0.03	0	2.55	0.25	0	0	1.48	0.05	0	5.26
West Fork Yankee Fork	7.98	0.4	0	0.54	0	0	0.03	0.61	0.07	0.07	9.69
Yellowbelly Lake Creek	3.13	0.07	0	0.61	0	0	4.49	0	0	1.02	9.32

YOY = Young of Year Chinook YRL = Yearling Chinook SH = Steelhead Rbt. = Rainbow Trt. H. Rbt. = Hatchery Rainbow Trt. BK = Brook Trt. WF = Whitefish BU = Bull Trt. C2 = Cutthroat Trt.

Appendix A. List of the streams in the Salmon Region and years for which snorkeling data has been compiled, 1991 -- 1995.

Stream	Years of Data
Alpine Creek	1994
Alturas Lake Creek	1993, 1994, 1995
Bear Valley Creek	1992, 1993, 1994
Beaver Creek	1992, 1993, 1994, 1995
Camas Creek	1991, 1992, 1993, 1994
Capehorn Creek	1992, 1993, 1994, 1995
East Fork Salmon River	1991, 1993
Hayden Creek	1992, 1993, 1994
Horse Creek	1993, 1994
Knapp Creek	1992
Lemhi River	1991, 1992, 1993, 1994, 1995
Loon Creek	1992, 1994, 1995
Marsh Creek	1991, 1992, 1993, 1994, 1995
Morgan Creek	1992, 1993, 1994
Moyer Creek	1992, 1993, 1994
North Fork Salmon River	1991, 1992, 1993, 1994, 1995
Pahsimeroi River	1991, 1992, 1993
Panther Creek	1992, 1993, 1994, 1995
Pettit Lake Creek	1993, 1994
Pine Creek	1992, 1993
Redfish Lake Creek	1992, 1993, 1994
Salmon River	1992, 1993, 1994, 1995
Silver Creek	1995
Thompson Creek	1992, 1993, 1994
Valley Creek	1991
Warm Springs Creek	1992, 1993, 1994
West Fork Yankee Fork	1991
Yellowbelly Creek	1993, 1994

Appendix B. Standardized snorkeling techniques to be used in Idaho Supplementation Studies.

Methods:

- The number of snorkelers depends on visibility and width of the stream.
- Snorkelers move slowly but steadily upstream in an assigned lane. The width of the lanes are determined by visibility. The snorkelers are not in a single line perpendicular to the stream. Instead, they are staggered. For example, if there are five snorkelers, one snorkeler will be close to each bank and counting fish between themselves and the banks. The next two divers will be slightly downstream (1-3 m depending on visibility) and closer to the center of the stream. They count the fish that swim between themselves and the diver closest to the bank on their side. The final diver is in the middle of the stream downstream of the other four and counts all the fish that swim between the two divers and swim past them. In essence, the divers form a "V" in the stream. It is important that they maintain accuracy of the counts.
- Field crews are trained prior to each field session in snorkeling techniques, fish identification, and size estimation. Calibrated dowels are carried by novices for more accurate size estimation.
- Visibility is measured prior to snorkeling (with an orange and white nylon measuring tape held underwater) to insure that visibility is sufficient to allow accurate counts. In most streams, visibility is >3 m.
- Snorkeling is done in daylight hours after streams temperatures have risen above 8°C. Juvenile salmonids have shown to conceal themselves when water temperatures drop to or below this level (Hillman et. al. in press, Reihle 1990).
- Chinook salmon are identified and counted as YOY, yearlings, or adults. All other salmonids are identified and lengths are estimated to the nearest inch. After several fish have been counted by an individual, he tells the data recorder walking on the bank behind the snorkelers. The recorder draws detailed sketch maps of the snorkeling reach, noting major habitat types, easily recognizable features of the surrounding land, etc. The person also gives detailed directions to the site, the starting and ending points, presence of flagging, and any other information that may be of value in locating the sites in the future. If a recorder is not available, all is recorded on plexiglas slates carried by the divers.

Appendix C. Summary of observed fish and fish densities (fish/100m²) for eight species encountered during snorkeling and electrofishing activities conducted between 1991 and 1995 in 28 of the Salmon Region tributaries and rivers.

All Species

2243

Total Numbers of Fish

5965.8

Total Numbers of Fish

All Species:
272307

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt = Rainbow Trt. H. Rbt = Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Ct = Cutthroat Trt.

DATE: 6/27/94
STREAM: Hayden Creek

Total Fish Density of Stream (fish/100m2):

Total Fish Density of Stream (fish/100m²):

Total Fish Density of Stream (fish/100m²):

Chinook YOY	Chinook YRL	Chinook Adults	SH	Rbt.	H. Rbt.	BK	WF	DV	Cl.	All Species:
1.3512	0.0000	0.0000	0.9625	0.0370	0.0000	0.0185	0.0740	0.3332	0.0000	2.776338

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Ct.= Cutthroat Trt.

Salmon Region Snorkel Surveys All Species

DATE: 7/1/94
STREAM: Horse Creek

Total Area Sampled (m2): 1455.9

#s	Chinook YOY	Chinook YRL	Chinook Adults																									
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total			
S.H.	5		20	32	18	10	3	7																	95			
Rbt.																									0			
H. Rbt.																									0			
B.K.																									0			
W.F.		1	13	7			2	1	2	2	2		2												32			
D.V.																									1			
Cl.			2					1	1	1		1													6			
Total Fish Density of Stream (fish/100m2):				9.20																				Total Numbers of Fish				134

DATE: 7/26/93
STREAM: Horse Creek

Total Area Sampled (m2): 1168.6

#s	Chinook YOY	Chinook YRL	Chinook Adults																								
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total		
S.H.			50	80	180	195	50	150	30	5	5	5													740		
Rbt.																									10		
H. Rbt.																									0		
B.K.																									0		
W.F.						2	2	2	1	2	1	1		1	1										15		
D. V.																1									1		
Cl.												1	1	1	1										3		
Total Fish Density of Stream (fish/100m2): 65.98																											
Total Numbers of Fish																											771

Overall density estimates (all years) (fish/100m2):

Chinook YOY	Chinook YRL	Chinook Adults	SH	Rbt.	H. Rbt.	BK	WF	DV	Cl.	All Species:
0.0762	0.0000	0.0000	31.8156	0.3810	0.0000	0.0000	1.7908	0.0762	0.3429	34.46276

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Cl.= Cutthroat Trt.

Salmon Region Snorkel Surveys

All Species

DATE: 7/13/92 to 7/14/92 Total Area Sampled (m2): 4979.9
STREAM: Knapp Creek

#s	Chinook YOY 229	Chinook YRL 6	Chinook Adults																							
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total	
S.H.	47	4	8	7	6	6	3																		81	
Rbt.											1														1	
H. Rbt.																									0	
B.K.	11	36	19	20	18	13	10	9	1	2	1		1												141	
W.F.																									0	
D. V.		5	3	7	2	1																			18	
Cl.				1	3	1	2		1																8	
Total Fish Density of Stream (fish/100m2):				9.72																					Total Numbers of Fish	484

Overall density estimates (all years) (fish/100m²):

Chinook YOY 4.5965	Chinook YRL 0.1205	Chinook Adults 0.0000	SH 1.6265	Rbt. 0.0201	H. Rbt. 0.0000	BK 2.8314	WF 0.0000	DV 0.3615	CL 0.1606	All Species: 9.719071
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YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Ct.= Cutthroat Trt.

Salmon Region Snorkel Surveys All Species

DATE: 8/14/94 to 8/15/95
STREAM: Lemhi River

Total Area Sampled (m2): 6483.9

#s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
Length (in.)																												
S.H.	299	270	79																									737
Rt.																												15
H. Rt.																												0
B.K.	91	32	94																									290
W.F.																												241
D.V.																												0
Ct.																												0
Total Fish Density of Stream (fish/100m2):	20.31																											
Total Numbers of Fish	1317																											

DATE: 6/28/94 to 7/18/94
STREAM: Lemhi River

Total Area Sampled (m2): 16049.9

#s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
Length (in.)																												
S.H.	183	200	173																									845
Rt.																												24
H. Rt.																												0
B.K.																												23
W.F.																												918
D.V.																												0
Ct.																												0
Total Fish Density of Stream (fish/100m2):	12.80																											
Total Numbers of Fish	2023																											

DATE: 6/30/93 to 8/12/93
STREAM: Lemhi River

Total Area Sampled (m2): 16508.7

#s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
Length (in.)																												
S.H.	132	79	32																									738
Rt.																												15
H. Rt.																												0
B.K.																												87
W.F.																												349
D.V.																												0
Ct.																												3
Total Fish Density of Stream (fish/100m2):	7.65																											
Total Numbers of Fish	1262																											

DATE: 6/24/92 to 8/3/92
STREAM: Lemhi River

Total Area Sampled (m2): 9952.3

#s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
Length (in.)																												
S.H.	709	415	158																									1315
Rt.																												7
H. Rt.																												0
B.K.																												0
W.F.																												22
D.V.																												151
Ct.																												0
Total Fish Density of Stream (fish/100m2):	15.50																											
Total Numbers of Fish	1543																											

DATE: 6/25/91 to 8/1/91
STREAM: Lemhi River

Total Area Sampled (m2): 13156.3

#s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
Length (in.)																												
S.H.	27	466	351																									1106
Rt.																												106
H. Rt.																												0
B.K.																												58
W.F.																												248
D.V.																												0
Ct.																												0
Total Fish Density of Stream (fish/100m2):	14.87																											
Total Numbers of Fish	1958																											

Overall density estimates (all years) (fish/100m2):

Chinook YOY	Chinook YRL	Chinook Adults	SH	Rt.	H. Rt.	BK	WF	DV	Ct.	All Species:
1.4658	0.0483	0.0032	7.6284	0.2687	0.0000	0.7048	2.8075	0.0032	0.0048	13.03478

YOY = Young of the Year Chinook YRL = Yearling Chinook SH = Steelhead Rt = Rainbow Trt H. Rt = Hatchery Rainbow Trt BK = Brook Trt WF = Whitefish DV = Bull Trt Ct = Cutthroat Trt

Salmon Region Snorkel Surveys All Species

DATE: 8/24/95
STREAM: Loon Creek
Total Area Sampled (m2): 2341.9

#s	Chinook YOY	Chinook YRL	Chinook Adults																								Total
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"			
S.H.				18	14	11	6	7		1																80	
Rbt.		10	13																							0	
H. Rbt.																										0	
B.K.						1																				1	
W.F.		2	80			3		4	1	8	3	13	1		3											118	
D. V.																										0	
Cl.						2		5		2		3	1													13	
Total Fish Density of Stream (fish/100m2):				9.10																							Total Numbers of Fish
																											213

DATE: 8/14/94
STREAM: Loon Creek
Total Area Sampled (m2): 2056.9

#s	Chinook YOY	Chinook YRL	Chinook Adults																					Total		
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"		
S.H.	1	13	3	1																					18	
Rbt.																										0
H. Rbt.																										0
B.K.																										0
W.F.											1	6	1	7	1	3										19
D.V.																										0
Cl.						1		1				1		1		1										5
Total Fish Density of Stream (fish/100m2):				4.28																				Total Numbers of Fish		
																								88		

DATE: 7/28/92
STREAM: Loon Creek
Total Area Sampled (m2): 1898.8

#s	Chinook YOY	Chinook YRL	Chinook Adults																					Total	
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	
S.H.	17	1		3	3		2	2		1															29
Rbt.																									0
H. Rbt.																									0
B.K.																									0
W.F.								1					1	1											21
D. V.							1	1		3				3											0
Cl.																1			4	5			4	5	12
Total Fish Density of Stream (fish/100m2):				4.37																				Total Numbers of Fish	
																								83	

Overall density estimates (all years) (fish/100m2):

Chinook YOY	Chinook YRL	Chinook Adults	SH	Rbt.	H. Rbt.	BK	WF	DV	Cl.	All Species:
1.0639	0.0159	0.0000	2.0166	0.0000	0.0000	0.0159	2.5089	0.0000	0.4764	6.097561

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trt H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Cl.= Cutthroat Trt.

Salmon Region Snorkel Surveys All Species

DATE: 7/26/95
STREAM: Marsh Creek

Total Area Sampled (m2): 7239.6

#s	Chinook YOY 40	Chinook YRL 12	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
Length (in.)																												
S.H.																												144
Rbt																												0
H. Rbt																												0
B.K.																												0
W.F.																												37
D.V.																												4
Cl																												8
Total Fish Density of Stream (fish/100m2):																												245

DATE: 8/20/94
STREAM: Marsh Creek

Total Area Sampled (m2): 2812.7

#s	Chinook YOY 970	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
Length (in.)																												
S.H.																												28
Rbt																												0
H. Rbt																												0
B.K.																												2
W.F.																												130
D.V.																												2
Cl																												5
Total Fish Density of Stream (fish/100m2):																												1147

DATE: 7/12/93 to 7/14/93
STREAM: Marsh Creek

Total Area Sampled (m2): 12726.4

#s	Chinook YOY 1719	Chinook YRL 4	Chinook Adults 3	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
Length (in.)																												
S.H.																												22
Rbt																												0
H. Rbt																												0
B.K.																												0
W.F.																												262
D.V.																												2
Cl																												8
Total Fish Density of Stream (fish/100m2):																												2532

DATE: 7/14/92 to 7/15/92
STREAM: Marsh Creek

Total Area Sampled (m2): 16695.1

#s	Chinook YOY 2979	Chinook YRL 16	Chinook Adults 5	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
Length (in.)																												
S.H.																												709
Rbt																												2
H. Rbt																												1
B.K.																												862
W.F.																												370
D.V.																												6
Cl																												75
Total Fish Density of Stream (fish/100m2):																												5025

DATE: 7/31/91
STREAM: Marsh Creek

Total Area Sampled (m2): 4236.6

#s	Chinook YOY 117	Chinook YRL 3	Chinook Adults 2	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
Length (in.)																												
S.H.																												37
Rbt																												0
H. Rbt																												0
B.K.																												0
W.F.																												19
D.V.																												1
Cl																												2
Total Fish Density of Stream (fish/100m2):																												161

Overall density estimates (all years) (fish/100m2):

Chinook YOY	13.3355	Chinook YRL	0.0601	Chinook Adults	0.0029	SH	2.1749	Rbt	0.0046	H. Rbt	0.0023	BK	3.1502	WF	1.8727	DV	0.0343	Cl	0.2244	All Species:	20.90182
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YOY = Young of the Year Chinook YRL = Yearling Chinook SH = Steelhead Rbt = Rainbow Trt H Rbt = Hatchery Rainbow Trt BK = Brook Trt WF = Whitefish DV = Bull Trt Cl = Cutthroat

Salmon Region Snorkel Surveys All Species

DATE: 8/3/94 Total Area Sampled (m2): 746.3
STREAM: Morgan Creek

#s	Chinook YOY	Chinook YRL	Chinook Adults																					Total		
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"		
S.H.	17	67	5	24	15	6	3		1		2		2												138	
Rbt.																									4	
H. Rbt.																									0	
B.K.																									0	
W.F.												1													1	
D. V.																									0	
Cl.																									0	
Total Fish Density of Stream (fish/100m2):				19.16																				Total Numbers of Fish		143

DATE: 7/15/93 Total Area Sampled (m2): 905.5
STREAM: Morgan Creek

#s	Chinook YOY	Chinook YRL	Chinook Adults																					Total		
Length (in.) >	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"		
S.H.		4	24	15	5	3																			51	
Rbt.																										0
H. Rbt.																										0
B.K.	4	5																								10
W.F.										1																1
D.V.																										0
Cl.										1																1
Total Fish Density of Stream (fish/100m2):				6.96																				Total Numbers of Fish		63

DATE: 6/25/92 Total Area Sampled (m2): 869.7
STREAM: Morgan Creek

#s	Chinook YOY	Chinook YRL	Chinook Adults																								Total	
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"				
S.H.	26	1			2	9	2	8	2	3		2		5		1									53			
Rbt.																									8			
H. Rbt.																									0			
B.K.																									0			
W.F.						1		1	1	1					1										5			
D. V.																									0			
Cl.																									0			
Total Fish Density of Stream (fish/100m2):				8.74																							Total Numbers of Fish	76

Overall density estimates (all years) (fish/100m2):

Chinook YOY	Chinook YRL	Chinook Adults	SH	Rbt.	H. Rbt.	BK	WF	DV	Cl.	All Species:
0.3966	0.0000	0.0000	9.5975	0.4759	0.0000	0.3966	0.2776	0.0000	0.0397	11.18382

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Cl.= Cutthroat Trt.

Salmon Region Snorkel Surveys

DATE: 8/2/94 **Total Area Sampled (m2):** 770

#s	Chinook YOY		Chinook YRL	Chinook Adults																					Total				
	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"					
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total				
S.H.		2	8	7	13	10	1	3	4																48				
Rbt.																									0				
H. Rbt.																									3				
B.K.										1		2													6				
W.F.													1												1				
D.V.							1																		1				
Cl.																									0				
Total Fish Density of Stream (Fish/100m ²)																												6.88	
																												Total Numbers of Fish	53

DATE: 7/14/93 **Total Area Sampled (m2):** 1499.6

[illegible]

DATE: 8/13/92 **Total Area Sampled (m2):** 1327.1

#s	Chinook YOY	Chinook YRL	Chinook Adults																						
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
S.H.	21	1	2	1	9	14	12	2	2	1	1	2		1											65
R.M.																									4
H.R.M.																									0
B.K.																									0
W.F.							1	1	1																0
D.V.																									3
Ct.																									0
Total Fish Density of Stream (fish/100m ²):				5.43																				Total Numbers of Fish	72

Overall density estimates (all years) (fish/100m2):

Chinook YOY	Chinook YRL	Chinook Adults	SH	Rbt.	H. Rbt.	BK	WF	DV	Cl.	All Species:
0.0000	0.0000	0.0000	4.3929	0.1390	0.1112	0.0000	0.0834	0.2224	0.0000	4.04081

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Ct.= Cutthroat Trt.

Salmon Region Snorkel Surveys All Species

DATE: 7/19/95 to 7/20/95
STREAM: North Fork Salmon River

Total Area Sampled (m2): 4892.8

#/s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
S.H.	13	2	29	53	35	12	3	4					2															152
Rbt.												1	2															3
H. Rbt.																												5
B.K.																												2
W.F.			27	9	2	6	10	6	7	10					30	3	19	4	4	1								138
D.V.																												6
Cl.			5	5	5	1	2	4	1	1					1													30
																												345

Total Fish Density of Stream (fish/100m2):

7.05

Total Numbers of Fish

DATE: 7/12/94 to 7/14/94
STREAM: North Fork Salmon River

Total Area Sampled (m2): 13706

#/s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
S.H.	275	100	203	169	75	66	26	17	9	9	9	9	9	2	2	2												956
Rbt.																												6
H. Rbt.																												25
B.K.																												6
W.F.	20	25	236	44	8	3	13	22	4	23					20	4			1	5				2				433
D.V.																												6
Cl.	18	1	18	15	14	7	6	8									2			2								92
																												3071

Total Fish Density of Stream (fish/100m2):

22.41

Total Numbers of Fish

DATE: 7/20/93 to 7/22/93
STREAM: North Fork Salmon River

Total Area Sampled (m2): 16024.7

#/s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
S.H.	399	60	64	130	76	64	30	16	7	3																		655
Rbt.																												2
H. Rbt.																												3
B.K.																												0
W.F.	8		8	4	4	9	12	30	9	30			7	29	8	18		7	8	8	4							197
D.V.																												4
Cl.				3	2	6	3	3	1	3			1	1	1	1	2	1										25
																												1253

Total Fish Density of Stream (fish/100m2):

7.82

Total Numbers of Fish

DATE: 6/30/92 to 7/7/92
STREAM: North Fork Salmon River

Total Area Sampled (m2): 14917.5

#/s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
S.H.	106	2	48	95	72	63	33	16	5	3																		445
Rbt.																												34
H. Rbt.																												50
B.K.																												0
W.F.	1	11	186	167	10	4	12	16	8	25	17	42	21	6	3	2												533
D.V.																												5
Cl.	1		4	7	8	9	3	5	1	1	2	1				3	1	1										52
																												1536

Total Fish Density of Stream (fish/100m2):

10.31

Total Numbers of Fish

DATE: 7/6/91 to 7/11/91
STREAM: North Fork Salmon River

Total Area Sampled (m2): 15444.8

#/s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
S.H.	214	24	205	191	159	125	59	59	22	17																		1075
Rbt.																												19
H. Rbt.																												18
B.K.																												0
W.F.	17	1	7		5	1	11	56	22	53	42	66	17	12	6	6	3	1	1									346
D.V.																												9
Cl.			5	14	7	10	11	1	1	2																		53
																												1894

Total Fish Density of Stream (fish/100m2):

12.25

Total Numbers of Fish

Overall density estimates (all years) (fish/100m2):

Chinook YOY 3.7254 Chinook YRL 0.0554 Chinook Adults 0.0108 SH 5.3289 Rbt. 0.1016 H. Rbt. 0.2554 BK 0.0123 WF 2.5380 DV 0.0492 Cl 0.3878 All Species: 12.4658

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt= Rainbow Trt H. Rbt= Hatchery Rainbow Trt BK= Brook Trt WF= Whitefish DV= Bull Trt Cl= Cutthroat Trt

Salmon Region Snorkel Surveys All Species

DATE: 6/29/93 to 7/1/93
STREAM: Pahsimeroi River

Total Area Sampled (m2): 17285.7

#s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
S.H.	329	17	1	410	7	18	51	22	83	65	35	14	27	2	22	18	7	2	7		6		3	3	1	1	1	732
Rbt.						20		8	5	2	10	2	2	13		1												73
H. Rbt.																												63
B.K.																												80
W.F.	35	14	250		24	33		29	12	28	15	46		2	51	13	85	9	4	7	2	19		10			2	691
D.V.										2	2	1								1								0
Ct.																							1					7
Total Fish Density of Stream (fish/100m2): 11.53																											Total Numbers of Fish	1993

DATE: 6/29/92 to 7/2/92
STREAM: Pahsimeroi River

Total Area Sampled (m2): 14051.1

#s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
S.H.	63	54	61	38	93	134	81	92	11	32				20	8	8	15	5	10		7							659
Rbt.																												91
H. Rbt.																												40
B.K.																												66
W.F.	65	149	194	37	1	25	21	37	22	58	31	43	29	33	7	10				1	1							764
D.V.																												1
Ct.																												15
Total Fish Density of Stream (fish/100m2): 26.53																											Total Numbers of Fish	3728

DATE: 7/1/91 to 7/3/91
STREAM: Pahsimeroi River

Total Area Sampled (m2): 12468.8

#s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
S.H.	204	33	72	41	43	70	42	51	16	22				9	17	5	8	3	22		3							594
Rbt.																												70
H. Rbt.																												1
B.K.	10	6	17	5	3	8	13	15	4	9				7	1	3	2											103
W.F.	38	50	97	3	6	33	19	31	53	83	65	33				9	22	9	12	4	3	1	2	3				576
D.V.																												2
Ct.																												7
Total Fish Density of Stream (fish/100m2): 20.20																											Total Numbers of Fish	2519

Overall density estimates (all years) (fish/100m2):

Chinook YOY	Chinook YRL	Chinook Adults	SH	Rbt.	H. Rbt.	BK	WF	DV	Ct.	All Species:
7.9898	0.2351	0.0046	4.5314	0.5342	0.2374	0.5684	4.6364	0.0068	0.0662	18.81038

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Ct.= Cutthroat Trt.

Salmon Region Snorkel Surveys

DATE: 7/20/95 to 7/21/95 Total Area Sampled (m2): 4021.4
 STREAM: Panther Creek

[illegible]

Total Fish Density of Stream (fish/100m²): 2.96

DATE: 8/10/95 Total Area Sampled (m2): 4468.4
STREAM: Panther Creek

	Chinook YOY	Chinook YRL	Chinook Adults																							
#s																										
Length (in.)	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'	21'	22'	23'	24'	Total	
S.H.	6	9	7	7	12	12	6	9	10	2															80	
Rbt																										9
H. Rbt.																										0
B.K.	1	27					2		1	1	1														65	
W.F.		2																								28
W.									2	2																8
Cl																										1
Total Numbers of Fish																									181	

Total Fish Density of Stream (fish/100m²): 4.05

DATE: 7/14/93
STREAM: Panther Creek

[illegible]

Total Fish Density of Stream (fish/100m²): 2.17

DATE: 8/11/92 to 8/14/92 Total Area Sampled (m2): 4458
 STREAM: Panther Creek

[illegible]

Total Fish Density of Stream (fish/100m²): 4.62

Overall density estimates (all years) (fish/100m²):

Chinook	Chinook	Chinook	SH	Rbt.	H. Rbt.	BK	WF	DV	Ct.
YOY	YRL	Adults							
0.0347	0.0000	0.0000	1.6664	0.0463	0.0058	0.6770	0.8911	0.1041	0.0984

All Species:
3.523714

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Ct.= Cutthroat Trt.

Salmon Region Snorkel Surveys All Species

DATE: 7/21/94 Total Area Sampled (m2): 811
STREAM: Petit Lake Creek

#s	Chinook YOY 146	Chinook YRL	Chinook Adults																									Total
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"				
S.H.				1	2	3		1																		7		
Rbt.																										0		
H. Rbt.												1		1												2		
B.K.	2			8	1	2	2																			15		
W.F.																										0		
D.V.																										0		
Cl.																										0		
Total Numbers of Fish																												170

Total Fish Density of Stream (fish/100m2): 20.96

DATE: 8/5/93 Total Area Sampled (m2): 1275.7
STREAM: Petit Lake Creek

#s	Chinook YOY 37	Chinook YRL 1	Chinook Adults																									Total
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"		Total		
S.H.			1	6	4	4	2	2																		19		
Rbt.																	1									1		
H. Rbt.																										1		
B.K.	12		1	2	9	4	4	5			1															38		
W.F.	2																									2		
D.V.																										0		
Cl.																										0		
Total Numbers of Fish																												99

Total Fish Density of Stream (fish/100m2): 7.76

Overall density estimates (all years) (fish/100m2):

Chinook YOY 8.7698	Chinook YRL 0.0479	Chinook Adults 0.0000	SH 1.2460	Rbt. 0.0479	H. Rbt. 0.1438	BK 2.5399	WF 0.0958	DV 0.0000	Cl. 0.0000	All Species: 12.89117
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YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Cl.= Cutthroat Trt.

Salmon Region Snorkel Surveys All Species

DATE: 7/13/93
STREAM: Pine Creek

Total Area Sampled (m2): 445.7

#s	Chinook YOY	Chinook YRL	Chinook Adults																										
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total				
S.H.		7	10	10	5	1			1																34				
Rbt.											1														0				
H. Rbt.									2																3				
B.K.																									0				
W.F.																									0				
D.V.							1	1				1													2				
Ct.								1	1	1	1														4				
Total Numbers of Fish																													43

Total Fish Density of Stream (fish/100m2):

ERR

DATE: 8/11/92
STREAM: Pine Creek

Total Area Sampled (m2): 447.5

#s	Chinook YOY	Chinook YRL	Chinook Adults																									
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total			
S.H.		31	33	20	8	10	2	4		1															109			
Rbt.												2													2			
H. Rbt.																									0			
B.K.																									0			
W.F.																									0			
D.V.				1	3						1														5			
Ct.																												
Total Numbers of Fish																												123

Total Fish Density of Stream (fish/100m2):

27.49

Overall density estimates (all years) (fish/100m2):

Chinook YOY	Chinook YRL	Chinook Adults	SH	Rbt.	H. Rbt.	BK	WF	DV	Ct.	All Species:
1.5642	0.0000	0.0000	31.9553	0.4469	0.6704	0.0000	0.0000	0.4469	2.0112	37.09497

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Ct.= Cutthroat Trt.

Salmon Region Snorkel Surveys

All Species

DATE: 7/15/94 Total Area Sampled (m2): 3178.1
STREAM: Redfish Lake Creek

#s	Chinook YOY 124	Chinook YRL	Chinook Adults																											
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total					
S.H.				8	6																				30					
Rbt.			4					2																	1					
H. Rbt.									2			1													6					
B.K.							1			3															0					
W.F.		14																							29					
D. V.			5	5		1				3															1					
Cl.												1													0					
Total Fish Density of Stream (fish/100m2):				6.01																								Total Numbers of Fish		191

DATE: 8/4/93 Total Area Sampled (m2): 3215.9
STREAM: Redfish Lake Creek

#'s	Chinook YOY 16	Chinook YRL 17	Chinook Adults 18																					Total			
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total		
S.H.	3		3	4				2	3	2															37		
Rbl.							5				1														1		
H. Rbl.					1		2	1																	4		
B.K.																									6		
W.F.	22	4						1	1	1					1										31		
D. V.			2				1																		2		
Cl.																									0		
Total Fish Density of Stream (fish/100m2): 2.63																									Total Numbers of Fish		91

DATE: 7/23/92 Total Area Sampled (m2): 3565
STREAM: Redfish Lake Creek

#s	Chinook YOY	Chinook YRL	Chinook Adults																									Total	
	105	2																											
Length (in.)	1'	2'	3'	4'	5'	6'	7'	8'	9'	10'	11'	12'	13'	14'	15'	16'	17'	18'	19'	20'	21'	22'	23'	24'					
S.H.	11	22	15	6	3	7	8	4	1	2															79				
Rbt.									1																	1			
H. Rbt.		5				1			1																	6			
B.K.																										0			
W.F.		2	2							1																5			
D.V.																										0			
Cl.																										0			
Total Fish Density of Stream (fish/100m2):				5.61																								Total Numbers of Fish	200

Overall density estimates (all years) (fish/100m2):

Chinook YOY	Chinook YRL	Chinook Adults	SH	Rbt.	H. Rbt.	BK	WF	DV	CL	All Species:
2.4601	0.0201	0.0000	1.4660	0.0301	0.1807	0.0000	0.6527	0.0301	0.0000	4.839843

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Ct.= Cutthroat Trt.

Salmon Region Snorkel Surveys All Species

DATE: 7/31/95
STREAM: Salmon River

Total Area Sampled (m2): 12767.4

#s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
Length (in.)	198	2																										126
S.H.	88		3	4	6	11	5	7	2					1														1
Rbt.					2			1	3	2				20														28
H. Rbt.																												5
B.K.	5																											5
W.F.	185		1	9	4	15	15	12	8				16	2	16	1	2	3	3									292
D.V.																												0
Cl.						2	1	1					1		1													6
Total Numbers of Fish																												658

Total Fish Density of Stream (fish/100m2): 5.15

DATE: 7/20/94
STREAM: Salmon River

Total Area Sampled (m2): 14524

#s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
Length (in.)	4500	20	2																									2488
S.H.	1743	692	4	5	16	14	5	3	3	3			3		2	4	1											7
Rbt.																												9
H. Rbt.					2			1					1	1	2	3	1											1
B.K.																												1
W.F.	351		127	37	8	20		5	4	25	7	48	2	31	2	1					1							669
D.V.																												0
Cl.																												0
Total Numbers of Fish																												7696

Total Fish Density of Stream (fish/100m2): 52.99

DATE: 8/10/93
STREAM: Salmon River

Total Area Sampled (m2): 19325.6

#s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
Length (in.)	814	327	7																									529
S.H.	417		33	21	16	24	14	1	1				2		1													2
Rbt.																												1
H. Rbt.																												0
B.K.																												0
W.F.	175		55	39	9	10	14	16	9	21	13	19	7	15	6	8					3		2					421
D.V.																												0
Cl.															1													1
Total Numbers of Fish																												2102

Total Fish Density of Stream (fish/100m2): 10.88

DATE: 7/22/92
STREAM: Salmon River

Total Area Sampled (m2): 15321.4

#s	Chinook YOY 2735	Chinook YRL 38	Chinook Adults 4																									Total
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"				
S.H.	1935	792	206	56	7	6	5	1		4																3012		
Rbt.												2														3		
H. Rbt.						3	4	4	5	5	3	10		3												37		
B.K.												1														1		
W.F.	437	139	146	106	26	22	22	27	16	36	13	40	4	20	5	17	2	3	10	11						1102		
D. V.																										0		
Cl.			1		3		1					1														6		
Total Numbers of Fish																												6938

Total Fish Density of Stream (fish/100m2): 45.28

Overall density estimates (all years) (fish/100m2):

Chinook YOY	Chinook YRL	Chinook Adults	SH	Rbt.	H. Rbt.	BK	WF	DV	Cl.	All Species:
13.3148	0.6248	0.0210	9.9373	0.0210	0.1211	0.0113	4.0104	0.0000	0.0210	28.08274

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt= Rainbow Trt. H. Rbt= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Cl= Cutthroat Trt.

All Species

Total Area Sampled (m2): 120.6

#s	Chinook YOY	Chinook YRL	Chinook Adults																					Total		
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total	
S.H.			2	1	1																				4	
Rbt																										0
H Rbt						1																				0
B.K.																										1
W/F																										0
D. V.																										0
Cl																										5
Total Fish Density of Stream (fish/100m2):				4.15																				Total Numbers of Fish		

Overall density estimates (all years) (fish/100m²):

Chinook YOY 0.0000	Chinook YRL 0.0000	Chinook Adults 0.0000	SH 3.3167	Rbt. 0.0000	H. Rbt. 0.0000	BK 0.8292	WF 0.0000	DV 0.0000	CL 0.0000	All Species: 4.145937
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YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Ct.= Cutthroat Trt.

Salmon Region Snorkel Surveys All Species

DATE: 7/19/94
STREAM: Thompson Creek

Total Area Sampled (m2): 745.7

#s	Chinook YOY	Chinook YRL	Chinook Adults																					Total				
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"				
S.H.	25	14	7	11	4	5		1	1																68			
Rbt.																										0		
H. Rbt.																										0		
B.K.																										0		
W.F.									1	1		1														3		
D. V.																										0		
Cl.																										0		
Total Numbers of Fish																												105

Total Fish Density of Stream (fish/100m2): 14.08

DATE: 7/16/93
STREAM: Thompson Creek

Total Area Sampled (m2): 995.9

	Chinook YOY	Chinook YRL	Chinook Adults																					Total						
#s				1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"			
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"						
S.H.																													20	
Rbt.																													0	
H. Rbt.																													1	
B.K.																													0	
W.F.																													14	
D.V.																													0	
Cl.																													0	
Total Numbers of Fish																														35

Total Fish Density of Stream (fish/100m2): 3.51

DATE: 6/25/92
STREAM: Thompson Creek

Total Area Sampled (m2): 930.1

#s	Chinook YOY	Chinook YRL	Chinook Adults																					Total			
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total		
S.H.						2				1															6		
Rbt.								3																	1		
H. Rbt.							1		2					1											3		
B.K.																									0		
W.F.																									0		
D. V.																									0		
Cl.																									0		
Total Numbers of Fish																											10

Total Fish Density of Stream (fish/100m2): 1.08

Overall density estimates (all years) (fish/100m2):

Chinook YOY	Chinook YRL	Chinook Adults	SH	Rbt.	H. Rbt.	BK	WF	DV	Cl.	All Species:
1.2352	0.0374	0.0000	3.5184	0.0374	0.1497	0.0000	0.5240	0.1123	0.0000	5.614403

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Cl.= Cutthroat Trt.

Salmon Region Snorkel Surveys All Species

DATE: 7/17/91 to 7/18/91
STREAM: Valley Creek

Total Area Sampled (m2): 4894.1

#s	Chinook YOY 179	Chinook YRL	Chinook Adults																					Total	
Length (in.)>	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
S.H.	5		3	2	3	4	3	2				3	1	2											22
Rbl.							1					1													6
H. Rbl.		1		1	1	2																			2
B.K.						2																			5
W.F.	2					2		4		3		3	1	2											17
D.V.							2																		0
Cl.																									2
Total Numbers of Fish																									233
Total Fish Density of Stream (fish/100m2):				4.76																					

Overall density estimates (all years) (fish/100m2):

Chinook YOY	Chinook YRL	Chinook Adults	SH	Rbt.	H. Rbt.	BK	WF	DV	Cl.	All Species:
3.6575	0.0000	0.0000	0.4495	0.1226	0.0409	0.1022	0.3474	0.0000	0.0409	4.760634

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Cl.= Cutthroat Trt.

All Species

Total Area Sampled (m2): 1138

Total Numbers of Fish

Total Fish Density of Stream (fish/100m2): 7.29

Total Area Sampled (m2): 1281.3

Total Numbers of Fish

Total Fish Density of Stream (fish/100m²): 1.80

Total Area Sampled (m2): 1233.1

Total Numbers of Fish

Total Fish Density of Stream (fish/100m²): 6.97

Overall density estimates (all years) (fish/100m²):

Chinook YOY	Chinook YRL	Chinook Adults	SH	Rbt.	H. Rbt.	BK	WF	DV	Ct.	All Species:
0.9035	0.0274	0.0000	2.5463	0.2464	0.0000	0.0000	1.4785	0.0548	0.0000	5 256817

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Ct.= Cutthroat Trt.

Eastern Region All Species

DATE: 7/30/91
STREAM: West Fork Yankee Fork

Total Fish Density of Stream (fish/100m²):

Overall density estimates (all years) (fish/100m²):

Chinook YOY	Chinook YRL	Chinook Adults	SH	Rbt.	H. Rbt.	BK	WF	DV	CL	All Species:
7.9768	0.4039	0.0000	0.5385	0.0000	0.0000	0.0337	0.6058	0.0673	0.0673	9.69338

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Ct= Cutthroat Trt.

Salmon Region Snorkel Surveys All Species

DATE: 7/21/94
STREAM: Yellowbelly Lake Creek
Total Area Sampled (m2): 316

#s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
Length (in.)>																												
S.H.																												0
Rbt.																												0
H. Rbt.																												0
B.K.	6		6	6	3	2	1	1																				25
W.F.																												0
D. V.																												0
Cl.			10	4	1																							15
Total Fish Density of Stream (fish/100m2):	26.27																										Total Numbers of Fish	83

DATE: 8/5/93
STREAM: Yellowbelly Lake Creek
Total Area Sampled (m2): 1154.4

#s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
Length (in.)>																												
S.H.	3				3	3																						9
Rbt.																												0
H. Rbt.																												0
B.K.	13	1	1	2	5	6	3	4	3					1														41
W.F.																												0
D. V.																												0
Cl.																												0
Total Fish Density of Stream (fish/100m2):	4.68																										Total Numbers of Fish	54

Overall density estimates (all years) (fish/100m2):

Chinook YOY	Chinook YRL	Chinook Adults	SH	Rbt.	H. Rbt.	BK	WF	DV	Cl.	All Species:
3.1284	0.0680	0.0000	0.6121	0.0000	0.0000	4.4886	0.0000	0.0000	1.0201	9.317193

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Cl= Cutthroat Trt.

All Species

Total Area Sampled (m2): 1897.5

#s	Chinook YOY	Chinook YRL	Chinook Adults																							
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total	
S.H.																									0	
Rbt																									0	
H. Rbt.																									0	
B.K.	43			5	1	1	3																		53	
W.F.	5																								5	
D. V.	6		1																						7	
Cl.	17	18																							35	
Total Fish Density of Stream (fish/100m2):				5.27																					Total Numbers of Fish	100

Chinook YOY 0.0000	Chinook YRL 0.0000
--------------------------	--------------------------

Chinook
Adults
0.0000

SH
0.0000

Rbt.
0.0000

H. Rbt.
0.0000

BK
2.7931WF
0.2635DV
0.3689Cl
1845

All Species:
5.270092

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Ct.= Cutthroat Trt.

Salmon Region Snorkel Surveys All Species

DATE: 7/27/95 to 7/28/95
STREAM: Alturas Lake Creek
Total Area Sampled (m2): 19132.6

#s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
Length (in.)																												
S.H.																												4
Rbt.																												0
H. Rbt.																												0
B.K.	90		8		16	16		5	8		5	1	1															150
W.F.	23	1	1		4	4		5	5		10	8	1		2	1	2		12	4								83
D.V.	77												1															82
Ct.	3		1			1		2																				5
Total Fish Density of Stream (fish/100m2):	1.80																										Total Numbers of Fish	344

DATE: 7/21/94
STREAM: Alturas Lake Creek
Total Area Sampled (m2): 12602.9

#s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
Length (in.)																												
S.H.	37																											53
Rbt.																												2
H. Rbt.																												0
B.K.	94		1		45	19		13		5		5	1		2	1												186
W.F.	60		2		2	4				1																		92
D.V.	14					1		1													9		14					18
Ct.	58												1								1		1					59
Total Fish Density of Stream (fish/100m2):	8.47																										Total Numbers of Fish	1067

DATE: 8/5/93 to 8/9/93
STREAM: Alturas Lake Creek
Total Area Sampled (m2): 15033.5

#s	Chinook YOY	Chinook YRL	Chinook Adults	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
Length (in.)																												
S.H.	3		2		6	12		9		1		1																34
Rbt.																												1
H. Rbt.																												1
B.K.	131		3		42	22		22		14		10		7		3		2										260
W.F.	68				1	3		6		4		2		7		6												153
D.V.																												1
Ct.						1																						1
Total Fish Density of Stream (fish/100m2):	3.44																										Total Numbers of Fish	517

Overall density estimates (all years) (fish/100m2):

Chinook YOY	Chinook YRL	Chinook Adults	SH	Rbt.	H. Rbt.	BK	WF	DV	Ct.	All Species:
1.5758	0.0128	0.0000	0.1946	0.0064	0.0021	1.2743	0.7013	0.2160	0.1390	4.122389

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trl. H. Rbt.= Hatchery Rainbow Trl. BK= Brook Trl. WF= Whitefish DV= Bull Trl. Ct.= Cutthroat Trl.

Salmon Region Snorkel Surveys All Species

DATE: 7/27/95 Total Area Sampled (m2): 2804.4
STREAM: Beaver Creek

#s	Chinook YOY	Chinook YRL	7	Chinook Adults																					Total
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	
S.H.				1	9	7	10	3	1																31
Rbt.																									0
H. Rbt.																									0
B.K.																									0
W.F.						1		2	1																4
D.V.				1		1																			5
Cl.				1									1												1
Total Fish Density of Stream (fish/100m2):				1.71																				Total Numbers of Fish	48

DATE: 7/23/94 Total Area Sampled (m2): 2983.4
STREAM: Beaver Creek

#s	Chinook YOY	Chinook YRL	Chinook Adults																					Total		
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"		
S.H.		4	7	5	1	3		2																	22	
Rbt.																									0	
H. Rbt.																									0	
B.K.																									0	
W.F.								2	2																5	
D.V.			1	1		2	1																		5	
Cl.																									1	
Total Fish Density of Stream (fish/100m2): 13.71																										Total Numbers of Fish
																										409

DATE: 8/3/93 Total Area Sampled (m2): 2691.4
STREAM: Beaver Creek

#s	Chinook YOY 12	Chinook YRL 7	Chinook Adults 3																					Total	
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total
S.H.	18	2	11	16	5	6	2	1	1																62
Rbt.																									0
H. Rbt.																									0
B.K.				2	2	1	2	1																	0
W.F.							1		1																2
D. V.					1	1	1																		3
Cl.						1																			1
Total Fish Density of Stream (fish/100m2):				3.64																				Total Numbers of Fish	98

DATE: 7/30/92 Total Area Sampled (m2): 961.1
STREAM: Beaver Creek

#s	Chinook YOY	Chinook YRL	Chinook Adults																					Total		
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total	
S.H.				2	2	3		1																	8	
Rbt.																									0	
H Rbt.																									0	
B.K.							1																		1	
W.F.								1	1																2	
D.V.																									0	
Cl.				1	4	4	6		1																16	
Total Fish Density of Stream (fish/100m2): 3.64																										Total Numbers of Fish 35

Overall density estimates (all years) (fish/100m2):

Chinook YOY	Chinook YRL	Chinook Adults	SH	Rbt.	H. Rbt.	BK	WF	DV	Cl.	All Species:
4.1206	0.2225	0.0318	1.3029	0.0000	0.0000	0.1483	0.0847	0.1377	0.2013	6.249801

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt= Rainbow Trl. H. Rbt.= Hatchery Rainbow Trl. BK= Brook Trl. WF= Whitefish DV= Bull Trl. Cl.= Cutthroat Trl.

Salmon Region Snorkel Surveys

DATE: 6/27/94
STREAM: Bear Valley Creek

Total Area Sampled (m2): 1220.6

#s	Chinook YOY	Chinook YRL	Chinook Adults																					Total	
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	
S.H.			5			2																			12
Rbt.																									0
H. Rbt.																									0
B.K.																									0
W.F.																									12
D. V.				6	2	2		1		1															0
Cl.																									24
Total Fish Density of Stream (fish/100m2):				1.97																				Total Numbers of Fish	

DATE: 6/29/93
STREAM: Bear Valley Creek

Total Area Sampled (m2): 1505.9

[illegible]

Total Fish Density of Stream (fish/100m²): 0.20

DATE: 6/23/92
STREAM: Bear Valley Creek

Total Area Sampled (m²): 1358.3

[illegible]

Total Fish Density of Stream (fish/100m²): 1.40

Overall density estimates (all years) (fish/100m²):

Chinook YOY	Chinook YRL	Chinook Adults	SH	Rbt.	H. Rbt.	BK	WF	DV	Ct.	All Species:
0.0000	0.0000	0.0000	0.3917	0.0000	0.0000	0.0245	0.0000	0.7099	0.0000	1.126126

YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Ct.= Cutthroat Trt.

Salmon Region Snorkel Surveys All Species

DATE: 8/3/94
STREAM: Camas Creek

Total Area Sampled (m2): 4188

#s	Chinook YOY 865	Chinook YRL	Chinook Adults																									
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total			
S.H.	157	97	69	23	21	4	10	8	1	1															391			
Rbt.											1														2			
H. Rbt.																1									0			
B.K.																									0			
W.F.		15	7																						0			
D.V.									1	1	1	2													22			
Cl.																1									5			
																									1			
Total Fish Density of Stream (fish/100m2):				30.73																				Total Numbers of Fish				1287

DATE: 7/14/93 to 7/15/93
STREAM: Camas Creek

Total Area Sampled (m2): 6767.4

#s	Chinook YOY 27	Chinook YRL	Chinook Adults 2																						Total	
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total	
S.H.			3	3	1	5				2		1													14	
Rbt.																									1	
H. Rbt.																									0	
B.K.																									0	
W.F.	2		1							1						1			3						7	
D. V.									1			1													4	
Cl.																1									0	
Total Fish Density of Stream (fish/100m2):				0.81																					Total Numbers of Fish	55

DATE: 8/12/92
STREAM: Camas Creek

Total Area Sampled (m2): 6577.6

#'s	Chinook YOY 300	Chinook YRL 2	Chinook Adults 3																									
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total			
S.H.	521	388	58	34	21	19	5	4		2															1052			
Rbt.																									0			
H. Rbt.																									0			
B.K.																									0			
W.F.	3	44	46	15	2			1		2	1	3	1	2		2			3						126			
D.V.						1																			3			
Cl.		1		6	2	3								1		2	1				1				14			
Total Fish Density of Stream (fish/100m2):				22.80																				Total Numbers of Fish				1500

DATE: 8/13/91
STREAM: Camas Creek

Total Area Sampled (m2): 7335.6

#s	Chinook YOY 184	Chinook YRL	Chinook Adults 8																									
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total			
S.H.	58		8	14	16	28	5	7	4	10		1	2	1											150			
Rbt.																									4			
H. Rbt.																									0			
B.K.																									1			
W/F	41		4		1	3		2		9	2	18	9	10	9	15	1	4		1					129			
D. V.																									0			
Cl.						1	1			1		1			1	2			1						8			
Total Fish Density of Stream (fish/100m2):				6.60																				Total Numbers of Fish				484

Overall density estimates (all years) (fish/100m2):

Chinook YOY 5.5331	Chinook YRL 0.0080	Chinook Adults 0.0563	SH 6.4620	Rbt. 0.0281	H. Rbt. 0.0000	BK 0.0040	WF 1.1420	DV 0.0483	Cl. 0.0925	All Species: 13.3743
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YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt. WF= Whitefish DV= Bull Trt. Cl.= Cutthroat Trt.

Salmon Region Snorkel Surveys All Species

DATE: 7/27/95
STREAM: Capehorn Creek

Total Area Sampled (m2): 1493.4

#s	Chinook YOY	Chinook YRL	Chinook Adults																							
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total	
S.H.				1																					1	
Rbt.																									0	
H. Rbt.																									0	
B.K.				1																					1	
W.F.					1	2	3	2	1																9	
D.V.																									0	
Cl.																									0	
Total Fish Density of Stream (fish/100m2):				0.94																						
																									Total Numbers of Fish	141

DATE: 7/23/94
STREAM: Capehorn Creek

Total Area Sampled (m2): 1396.3

#s	Chinook YOY 1364	Chinook YRL	Chinook Adults																									
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total			
S.H.			1	3					1																	5		
Rbt.																										0		
H. Rbt.																										0		
B.K.			1	5						1																7		
W.F.									1																	1		
D.V.						1						1														2		
Cl.																										0		
Total Fish Density of Stream (fish/100m2):				98.76																								
				Total Numbers of Fish																								1379

DATE: 8/23/93
STREAM: Capehorn Creek

Total Area Sampled (m2): 1299

#s	Chinook YOY	Chinook YRL	Chinook Adults																									
	147	21	5																									
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total			
S.H.	1			1																					2			
Rbt.																									0			
H. Rbt.																									0			
B.K.				1	1						1														3			
W.F.								1			4														5			
D.V.																									0			
Cl.														1											1			
Total Fish Density of Stream (fish/100m2):				14.16																								
				Total Numbers of Fish																								184

DATE: 7/29/92
STREAM: Capehorn Creek

Total Area Sampled (m2): 1234.7

#s	Chinook YOY 305	Chinook YRL 4	Chinook Adults																									
Length (in.)	1"	2"	3"	4"	5"	6"	7"	8"	9"	10"	11"	12"	13"	14"	15"	16"	17"	18"	19"	20"	21"	22"	23"	24"	Total			
S.H.	1				1		1																		3			
Rbt.																									0			
H. Rbt.																									0			
B.K.	1				6	3	3	3	2																18			
W.F.																									0			
D.V.					2	1	1																		4			
Cl.																									0			
Total Fish Density of Stream (fish/100m2):				27.05																								
				Total Numbers of Fish																								334

Overall density estimates (all years) (fish/100m2):

Chinook YOY	33.4845	Chinook YRL	0.5163	Chinook Adults	0.0922	SH	0.2028	Rbt.	0.0000	H. Rbt.	0.0000	BK	0.5347	WF	0.2766	DV	0.1106	Cl.	0.0184	All Species:	35.2362
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YOY= Young of the Year Chinook YRL= Yearling Chinook SH= Steelhead Rbt.= Rainbow Trt. H. Rbt.= Hatchery Rainbow Trt. BK= Brook Trt WF= Whitefish DV= Bull Trt. Cl.= Cullthroat Trt.

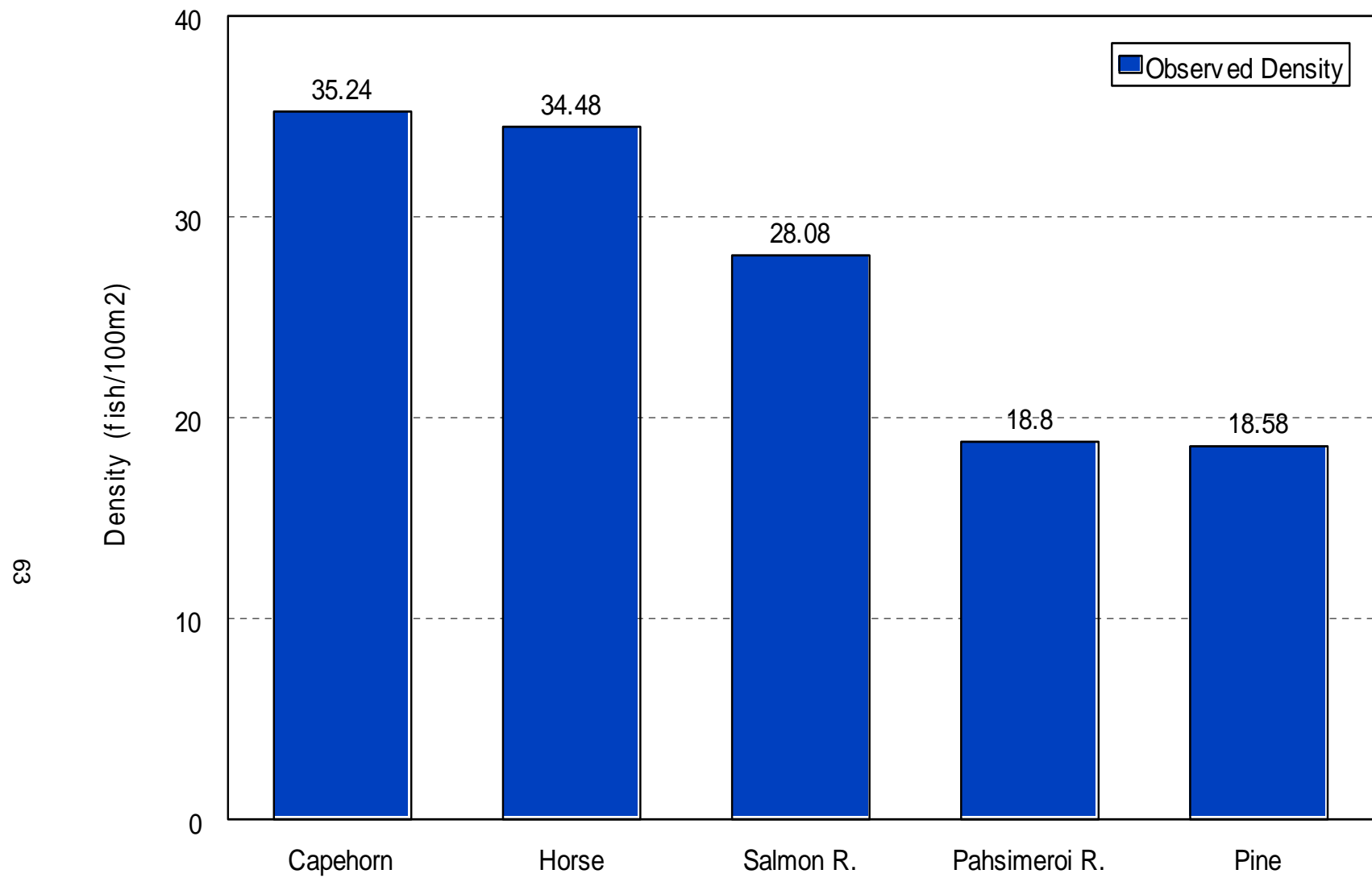
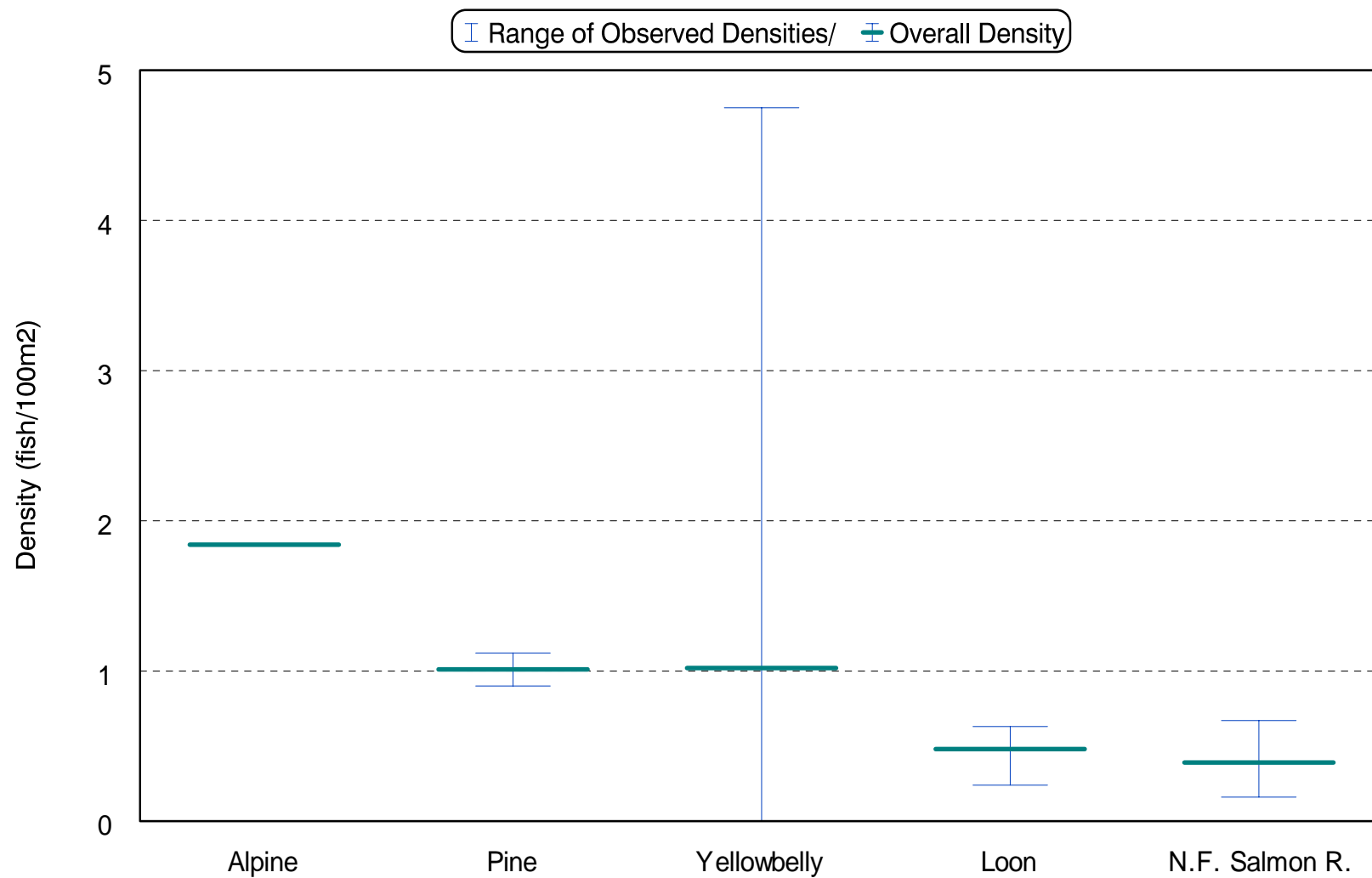
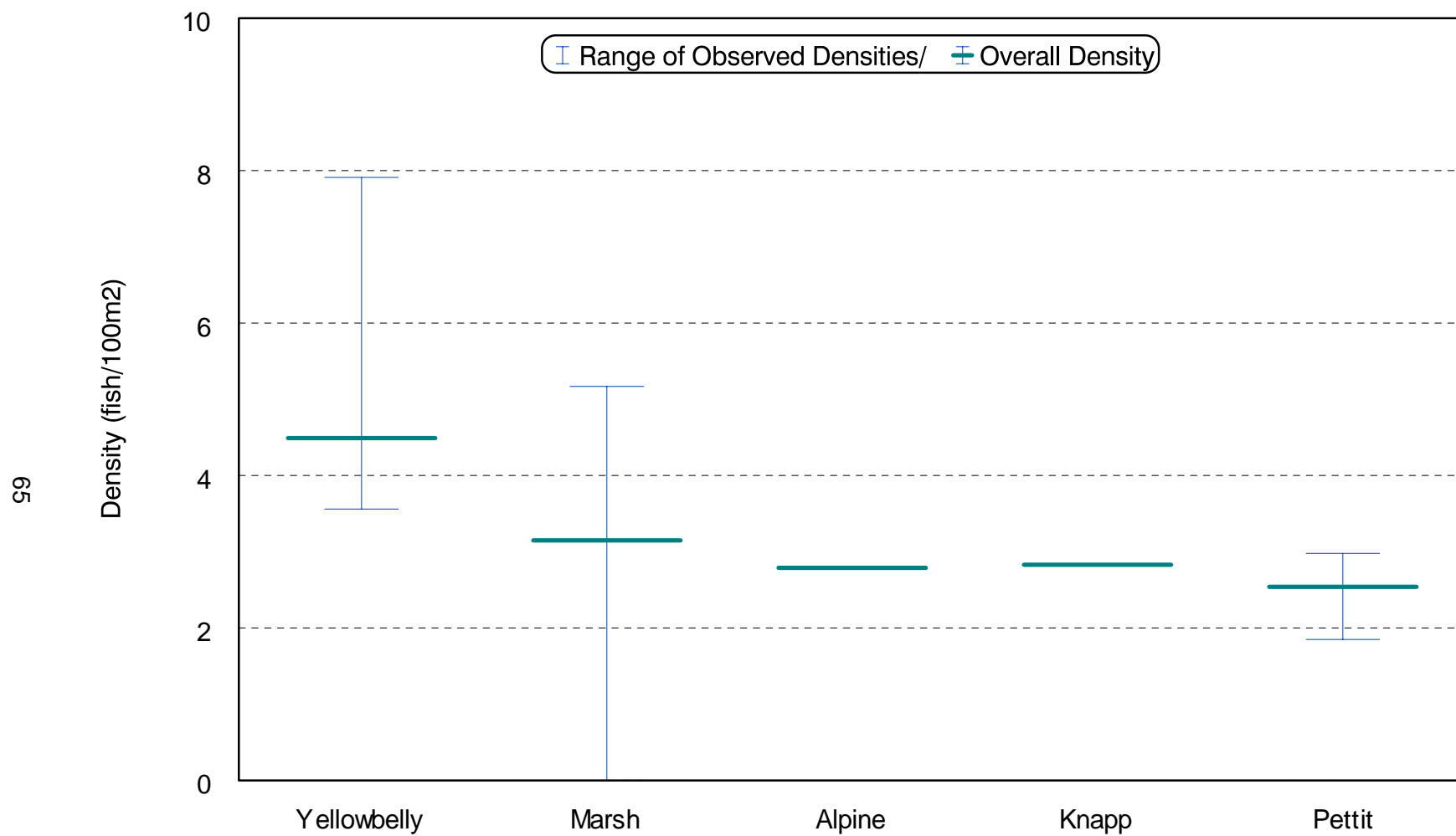


Figure 1. Salmon Region streams exhibiting the highest overall densities of fish (all species), 1991-1995.



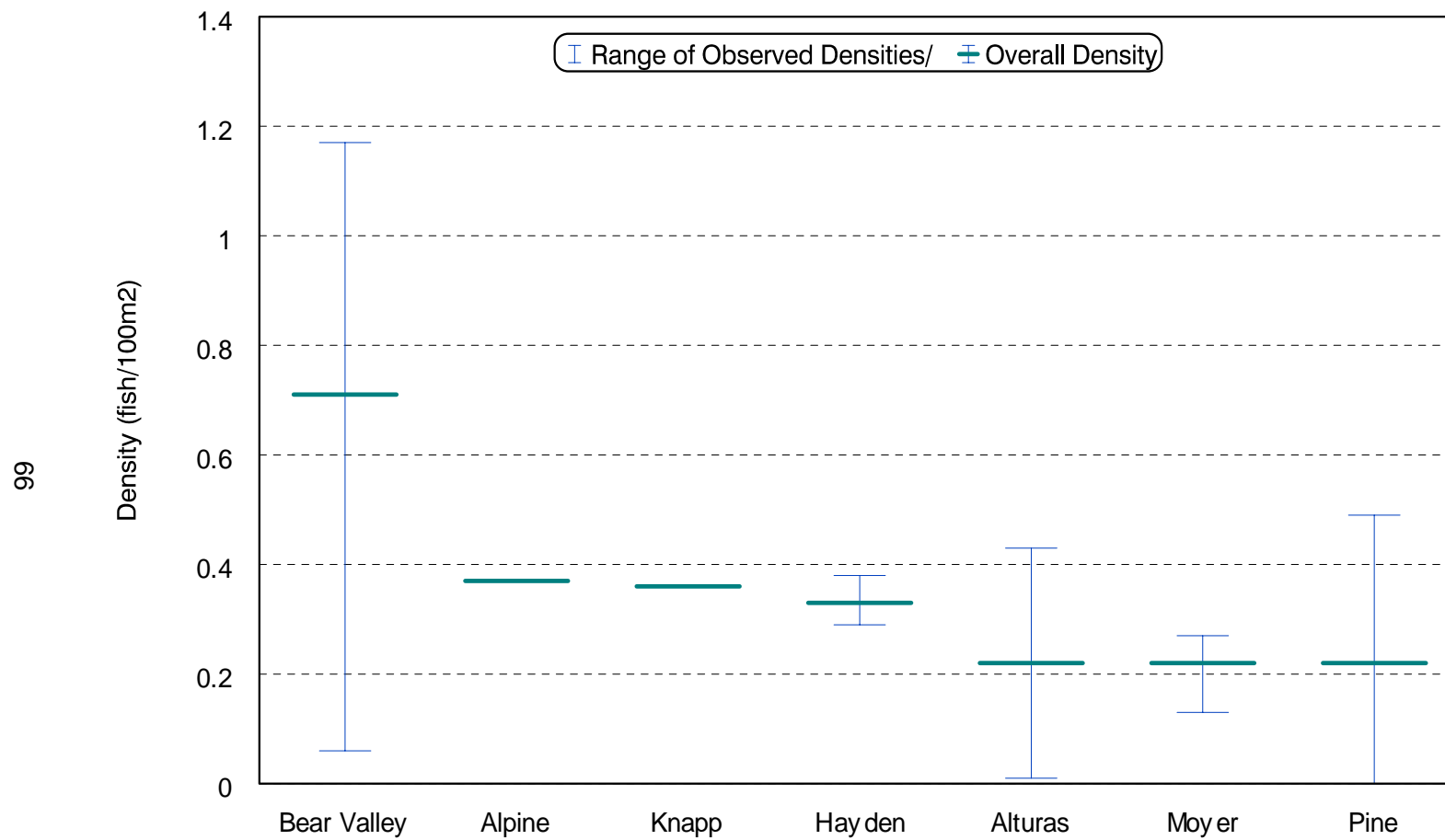
Streams with one year data depict only overall density.

Figure 2. Salmon Region streams exhibiting the highest densities of cutthroat trout (1991-1995).



Streams with one year data depict only overall density.

Figure 3. Salmon Region streams exhibiting the highest densities of brook trout (1991-1995).



Streams with an overall density only, results from 1 yr. of data.

Figure 4. Salmon Region streams exhibiting the highest densities of bull trout (1991-1995).

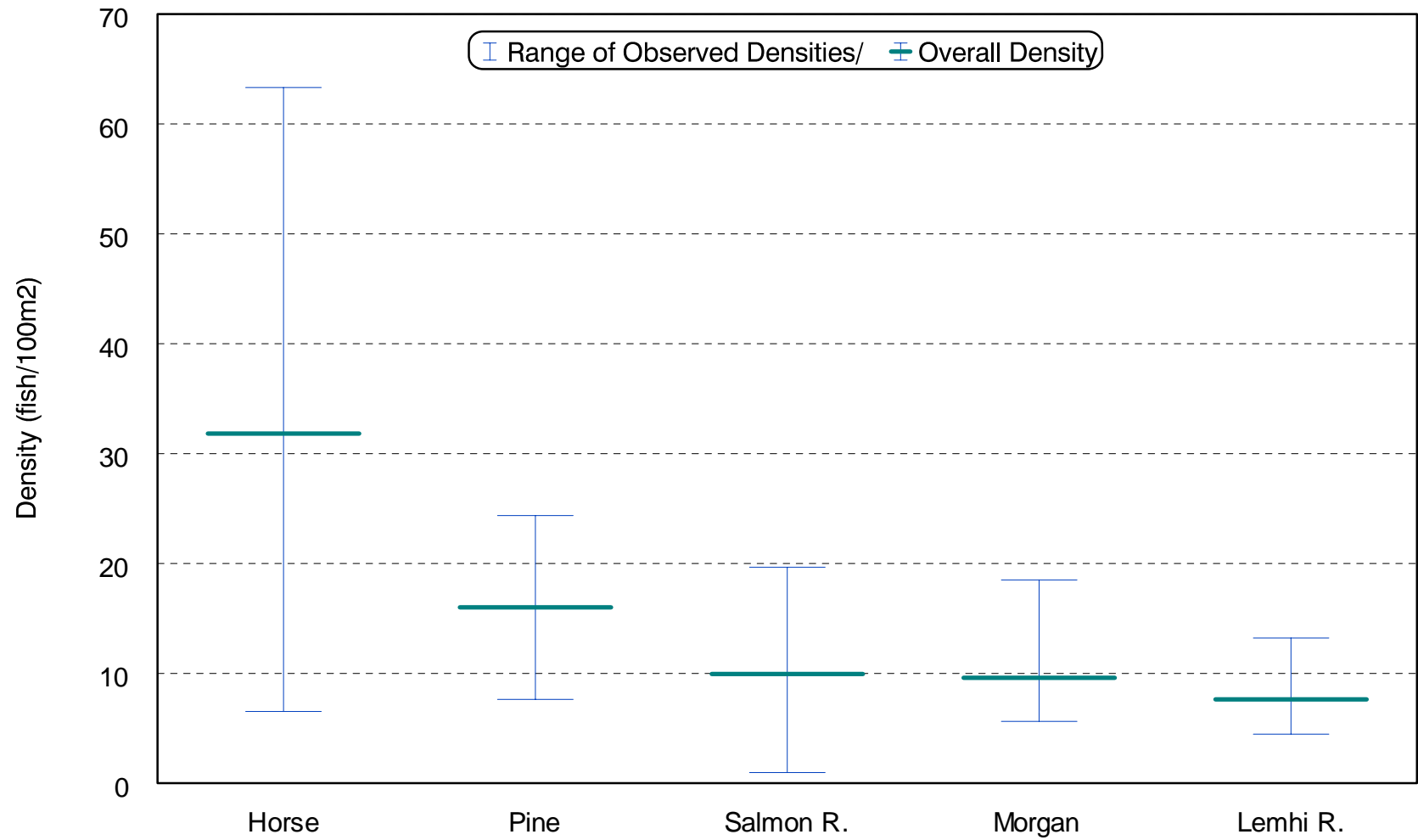


Figure 5. Salmon Region streams exhibiting the highest densities of rainbow trout (1991-1995).

1995 ANNUAL PERFORMANCE REPORT

State of: Idaho

Program: Fishery Management F-71-R-20

Project I: Surveys and Inventories

Subproject I-H: Salmon Region

Job: d

Title: Salmon and Steelhead Investigations

Contract Period: July 1, 1995 to June 30, 1996

ABSTRACT

We conducted annual salmon redd counts in the Marsh Creek drainage, Salmon River, Lemhi River, East Fork Salmon River, Pahsimeroi River, and the Yankee Fork Salmon River. This data is included in the annual salmon spawning ground surveys report. Salmon Region's salmon and steelhead investigations are incorporated in a separate, statewide Salmon and Steelhead Investigations report.

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1995 ANNUAL PERFORMANCE REPORT

State of: Idaho

Program: Fishery Management F-71-R-20

Project II: Technical Guidance

Subproject II-H: Salmon Region

Contract Period: July 1, 1995 to June 30, 1996

ABSTRACT

During 1995, technical assistance was provided to all state and federal agencies upon request. Comments were submitted to various agencies and private entities concerning stream alterations, bank stabilization, mining operations and reclamation plans, fish rearing proposals, private ponds, water right applications, grazing allotments, timber sales, highway reconstruction, habitat improvements, bridge construction, and hydropower projects. On-site inspections of proposed, on-going, and completed projects were conducted.

Technical assistance was also provided in the form of angler informational meetings; school presentations and development of the Salmon Region portion of the 1-800-ASK-FISH program. Also, we responded to the general public in person, by telephone, and by mail to inquiries about fishing opportunities, techniques, regulations, and area specifics.

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OBJECTIVES

1. To assist the Department of Water Resources, the Department of Lands, the U.S. Army Corps of Engineers and other state, federal, local, and private entities in evaluating the effects of habitat manipulation on fish and fish habitat.
2. To recommend procedures that minimize adverse effects of stream course alterations on aquatic habitat and fish.
3. To provide information on all aspects of fisheries and aquatic habitat as requested.

METHODS

We responded to all requests for data, expertise, and recommendations from individuals, government agencies, and corporations. Meetings were attended, field inspections conducted, and responses generated as appropriate.

RESULTS

During 1995, we responded in writing to requests for technical assistance or comments on various water and fishery-related matters as follows:

<u>Agency</u>	<u>Number of Requests</u>
Idaho Outfitters & Guides Licensing Board	6
U.S. Forest Service	7
Idaho Department of Water Resources	15
U.S. Department of Transportation	2
Private and Miscellaneous	7
Corps of Engineers	3
Custer/Lemhi County Commissioners	4
Shoshone-Bannock Tribes	3
Bureau of Reclamation	12

Telephone communication was the major mode of inter-agency contact. Commonly, we responded to stream alteration proposals by meeting with the applicant on-site, determining the nature of the situation, and sending written comments to the appropriate agency. Due to the remoteness of the Salmon Region, we were often the only agency representatives available to conduct on-site inspections.

We responded to numerous inquiries from the public (by telephone, letter, and in person) about when, where, and how to participate in various fisheries in the region, ranging from steelhead angling to alpine lake fishing.

We reported weekly steelhead fishing results on the local radio station and in area newspapers throughout the season.

Because the Salmon Region has no Information and Education or Regional Conservation Education personnel, we respond to numerous requests from local schools for fish and wildlife related presentations. During 1995, Salmon Region fisheries personnel conducted 15 presentations to approximately 375 students in three different schools.

RECOMMENDATIONS

1. Technical guidance on issues involving fishery resources in the Salmon Region should be continued to assist in maintaining fishery resources in the region.
2. Because of the number of requests for technical guidance and the potential impact of projects to remaining fish resources in the Salmon Region, consideration should be given to adding additional staff in the region to administer habitat issues and information and education needs.

1995 ANNUAL PERFORMANCE REPORT

State of: Idaho

Program: Fishery Management F-71-R-20

Project III: Habitat Management

Subproject III-H: Salmon Region

Contract Period: July 1, 1995 to June 30, 1996

ABSTRACT

In November 1995, we provided equipment, labor, and funding (through the departments challenge grant program) to construct over 10,000 feet of fence on the upper Lemhi River. The fence created a riparian pasture that will limit livestock use to only short periods during the spring and summer, protecting critical anadromous and resident fishes' spawning and rearing areas. The fence was designed and constructed with the assistance of the landowner, Shoshone-Bannock Tribes, Bureau of Land Management, Trout Unlimited, Model Watershed Project, Natural Resource Conservation Service, and the United States Forest Service.

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1995 ANNUAL PERFORMANCE REPORT

State Of: Idaho

Program: Fisheries Management F-71-R-20

Project IV: Population Management

Subproject IV-H: Salmon Region

Contract Period: July 1, 1995 to June 30, 1996

ABSTRACT

During the summer of 1995, 92 mountain lakes were stocked in the Salmon Region. A total of 35,565 fry were stocked in the Sawtooth Wilderness and Challis National Forest lakes. Species stocked included 7,500 grayling *Thymallus arcticus*, 8,930 rainbow trout *Oncorhynchus mykiss*, and 18,885 cutthroat trout fry *Oncorhynchus clarki lewisi*. A Cessna 185 fixed wing aircraft was used to stock Salmon Region lakes in 1995 at a cost of \$29.11 per lake or \$.042 per fish.

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OBJECTIVES

To maintain a viable high mountain lake fishery in the Salmon Region.

METHODS

A Cessna 185 fixed wing aircraft was used to stock Salmon Region high mountain lakes.

Stocking records were summarized for each lake.

RESULTS

A total of 35,565 fry were stocked in the Sawtooth Wilderness (Table 1) and Challis National Forest (Table 2): 7,500 grayling *Thymallus arcticus*, 18,885 westslope cutthroat trout *Oncorhynchus clarki lewisi*, and 8,930 rainbow trout *Oncorhynchus mykiss*. An additional 22,250 cutthroat fry were requested for 37 lakes. Due to a lack of available cutthroat fry these lakes were not stocked. Golden trout *O. aquabonita* were also requested but not available.

Table 1. Sawtooth mountain lake fry plants, 1995.

Lake name	Number stocked	Species ^a
Alpine Cr #2	250	C2
Alpine Cr #3	250	C2
Alpine Cr #4	1000	GR
W of Alpine #4	250	C2
Alpine Cr #5	250	C2
Alpine Cr #5	250	GR
Alpine Cr #6	250	C2
Alpine Cr #7	250	C2
Alpine Cr #8	150	C2
Alpine Cr #9	150	C2
Alpine Cr #10	250	GR
Alpine Cr #11	250	C2
Alpine Cr #12	250	C2
Alpine Cr #13	400	GR
Alpine Cr #14	400	GR
Alpine Cr #15	400	GR
U. Cramer	250	C2
Decker #1	250	C2
Elizabeth	250	C2
Fishhook Cr #3	250	C2
Goat Cr #1	500	C2
Goat Cr #4	250	C2
Goat Cr #6	250	C2
Hanson #1	250	C2
Hanson #3	250	C2
Hanson #5	250	C2
Hell Roaring Lake	600	GR
Hell Roaring Lake	150	C2
Hell Roaring #1	250	C2
Hell Roaring #2	250	C2
Lucille (HR #14)	250	C2
Profile (HR #15)	250	C2
Hidden	250	C2
Imogene #1	3000	K1
Imogene #2	250	C2
Imogene #3	250	C2
Imogene #4	250	C2
Imogene #5	250	C2
Imogene #6	250	C2
Iron Cr #6	250	C2
Iron Cr #7	500	K1
Marshall #2	250	C2
McGowan #1	500	K1
McGowan #2	500	K1
McGowan #3	500	K1
Parks Peak #1	350	C2

Table 1. (Continued) Sawtooth mountain lake fry plants, 1995.

Lake name	Number stocked	Species ^a
Parks Peak #2	350	C2
U. Redfish #1	750	GR
U. Redfish #2	250	C2
Saddleback L #1	250	C2
Saddleback L #2	250	C2
Stephens	250	C2
Thompson Cirque	250	C2

^aC2=westslope cutthroat trout.

GR=grayling.

K1=kamloops.

Table 2. Challis National Forest mountain lake fry plants, 1995.

Lake name	Number stocked	Species ^a
Cabin Cr Peak #1	135	C2
Cabin Cr Peak #3	250	C2
Cabin Cr Peak #4	250	C2
Cliff Cr #1	250	C2
Collie	300	C2
Elk Lake	250	C2
F-82	300	C2
S F Fall Cr #3	250	K1
Hindman #1	250	C2
Hindman #3	250	C2
Iris #1	250	C2
Iris #3	500	K1
Island	1000	K1
Kidney	500	K1
Knapp Cr #3	250	C2
Knapp Cr #7	250	C2
Knapp Cr #8	250	C2
Knapp Cr #14	400	GR
Langer	1250	K1
Lola Cr #2	250	C2
Lola Cr #3	250	C2
Lower Valley Cr	500	K1
MacRae (Deer)	1000	GR
Muskeg #1	500	K1
Muskeg #3	500	K1
Rainbow	500	K1
Ruffneck	1130	K1
Seafoam #3	900	GR
Seafoam #4	300	GR
Seafoam #6	500	GR
Soldier #2	250	C2
Soldier #4	250	C2
Soldier #5	250	C2
Soldier #7	250	C2
Soldier #8	250	C2
Soldier #10	150	C2
Valley Cr #1	250	C2
Valley Cr #2	250	C2
Vanity #2	250	C2
Vanity #8	150	C2
Vanity #13	600	GR

^aC2=westslope cutthroat trout.

RB=rainbow trout.

K1=kamloops.

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